

No. 15141

United States
Court of Appeals
for the Ninth Circuit

BARTHOLOMAE CORPORATION,

Appellant,

VS.

UNITED STATES OF AMERICA,

Appellee.

Transcript of Record

Appeal from the United States District Court for the
Southern District of California
Central Division.

FILE

SEP -5 1956

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[Clerk's Note: When deemed likely to be of an important nature, errors or doubtful matters appearing in the original certified record are printed literally in *italic*; and, likewise, cancelled matter appearing in the original certified record is printed and cancelled herein accordingly. When possible, an omission from the text is indicated by printing in *italic* the two words between which the omission seems to occur.]

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United States District Court, Southern District
of California, Central Division

No. 14795-WB

BARTHOLOMAE CORPORATION, a Corpora-
tion,

Plaintiff,

vs.

UNITED STATES OF AMERICA,

Defendant.

COMPLAINT

Count One (Tort Claim)

I.

Plaintiff is a California corporation having its principal office for the transaction of business at Fullerton, Orange County, California, and is, therefore, a resident of the Southern District of California, Central Division.

II.

Jurisdiction is invested in this Court by Title 28, Section 1346 (b), U.S.C.

III.

Plaintiff at all times herein mentioned was and now is the owner of certain real property and the improvements thereon located in Eureka County, Nevada, and known as the Fish Creek Ranch. The improvements thereon included four buildings, [2*] commonly known and herein identified as (1) Bartholomae Cottage; (2) office building; (3) mess hall,

*Page numbering appearing at foot of page of original Certified Transcript of Record.

and (4) bunk house, which structures are the improvements which became damaged as hereinafter alleged.

IV.

The Atomic Energy Commission is a federal executive agency created by Title 42, Section 1802 (a)(1), U. S. C.

V.

Commencing on or about October 22, 1951, and on various occasions thereafter through November 5, 1951 (the exact dates and times being unknown to plaintiff) the defendant, United States of America, by and through said Atomic Energy Commission detonated certain high explosives, commonly known as atomic bombs or atomic weapons, within the State of Nevada at or near a site known as Frenchman's Flat, in such a negligent and careless manner, considering the known force of such explosions and the effects thereof to be anticipated, as to forcibly and violently shake the improvements described in Paragraph III hereof.

VI.

As a direct and proximate result of the impact of such explosions upon said improvements, plaintiff's said property was damaged in the sum of Five Thousand Dollars (\$5,000).

Count Two (Tort Claim)

I.

Plaintiff refers to the allegations contained in Paragraphs I, II, III, IV and VI of its First Count

and by such reference adopts and repleads the same herein.

II.

Commencing on or about October 22, 1951, and on various occasions thereafter through November 5, 1951, (the exact dates and times being unknown to plaintiff) the defendant, United [3] States of America, by and through said Atomic Energy Commission, and while said explosive materials and all activities herein referred to and the area in which activities were conducted were in the exclusive secret control of said defendant, negligently detonated certain high explosives, commonly known as atomic bombs or atomic weapons within the State of Nevada at or near a site known as Frenchman's Flat.

III.

That such explosions forcibly and violently shook plaintiff's land known as the Fish Creek Ranch and the improvements thereon.

Count Three (Absolute Liability; Claim for Non-Tortious Damages)

I.

Plaintiff refers to the allegations contained in Paragraphs I, III, IV and VI of its First Count and by such reference adopts and repleads the same herein.

II.

Jurisdiction is invested in this Court by Title 28, Section 1346(a)(2), U. S. C.

III.

Commencing on or about October 22, 1951, and on various occasions thereafter through November 5, 1951, (the exact dates and times being unknown to plaintiff) the defendant, United States of America, by and through said Atomic Energy Commission, intentionally and purposely detonated certain high explosives, commonly known as atomic bombs or atomic weapons, within the State of Nevada at or near a site known as Frenchman's Flat.

IV.

That the then known force of such explosions was such that the conducting of such activity was ultra-hazardous and necessarily involved a risk of serious harm and damage to property [4] within the vicinity thereof and not owned by defendant. That such damage could not have been eliminated by the exercise of utmost care upon the part of defendant. That the detonation of atomic bombs and weapons was not then a matter of common usage, and, to the contrary, was prohibited by law except as to the defendant.

Count Four (Damages for Taking)

I.

Plaintiff refers to the allegations contained in Paragraphs I, III and IV of its First Count and by such reference adopts and repleads the same herein.

II.

Jurisdiction is invested in this Court by Title 28, Section 1346 (a) (2), U.S.C.

III.

That between October 22, 1951, and November 6, 1951, defendant, United States of America, by and through said Atomic Energy Commission, intentionally took and acquired the right and privilege to shake and damage plaintiff's Fish Creek Ranch property and the affixed improvements thereon as an unavoidable result of its intentional detonating of atomic bombs and atomic weapons in the State of Nevada, at or near a site known as Frenchman's Flat. That such taking was authorized by Title 42, Section 1806 (a) (1), U. S. C.

IV.

That through such taking plaintiff's said property was damaged in the sum of Five Thousand Dollars (\$5,000).

Wherefore, plaintiff demands judgment against defendant for the sum of Five Thousand Dollars (\$5,000) and for such other and general relief as the Court shall find it entitled to.

/s/ IRL D. BRETT,

Attorney for Plaintiff.

[Endorsed]: Filed December 2, 1952. [5]

[Title of District Court and Cause.]

ANSWER

Comes now the defendant, United States of America, and for its answer to the complaint on file herein, admits, denies and alleges as follows:

Count One (Tort Claim)

I.

The defendant does not have sufficient information upon which to form a belief as to the truth of the allegations set forth in Paragraphs I and III of Count One, and on said ground denies each and every allegation therein contained.

II.

The defendant admits the allegations contained in Paragraph IV of Count One of said complaint.

III.

The defendant denies each and every allegation contained in Paragraphs V and VI of Count One of said complaint, and specifically denies that [6] the plaintiff has been damaged in the sum of Five Thousand Dollars (\$5,000.00) or in any other sum whatsoever.

Count Two (Tort Claim)

I.

Answering Paragraph I of Count Two of the within complaint, this defendant admits, denies and alleges in answer to the paragraphs of the First Count adopted by reference therein to the same

effect and in the same manner as this answering defendant admitted, denied and alleged in answer to those specific paragraphs of Count One Herein.

II.

The defendant both generally and specifically denies each and every allegation in Paragraph II of Count Two of plaintiff's complaint.

III.

The defendant does not have sufficient information upon which to form a belief as to the truth of the allegations set forth in Paragraph III of Count Two of this complaint, and on such ground denies each and every allegation therein contained.

Count Three (Absolute Liability Claim
for Non-Tortious Damages)

I.

Answering Paragraph I of Count Three of the within complaint, this defendant admits, denies and alleges in answer to the paragraphs of the First Count adopted by reference therein to the same effect and in the same manner as this answering defendant admitted, denies and alleged in answer to those specific paragraphs of Count One herein.

II.

The defendant both generally and specifically denies each and every allegation contained in Paragraphs III and IV of Count Three of this [7] complaint.

Count Four (Damages for Taking)

I.

Answering Paragraph I of Count Four of the within complaint, this defendant admits, denies and alleges in answer to the paragraphs of the First Count adopted by reference therein to the same effect and in the same manner as this answering defendant admitted, denied and alleged in answer to those specific paragraphs of Count One herein.

II.

The defendant both generally and specifically denies each and every allegation contained in Paragraphs III and IV of Count Four of this complaint; further answering Paragraph IV defendant both generally and specifically denies plaintiff's property has been damaged in the sum of Five Thousand Dollars (\$5,000.00) or in any other sum whatsoever.

Wherefore, this answering defendant prays that judgment be entered in favor of the defendant and against the plaintiff herein, that the defendant have its costs and disbursements incurred herein, and that the defendant have such other and further relief as to the Court may seem meet and just.

WALTER S. BINNS,
United States Attorney;

CLYDE C. DOWNING,
Assistant U.S. Attorney,
Chief of Civil Division;

/s/ MAX F. DEUTZ,

Assistant U.S. Attorney,
Attorneys for Defendant.

Affidavit of Service by Mail attached.

[Endorsed]: Filed March 24, 1953. [8]

[Title of District Court and Cause.]

PLAINTIFF'S PROPOSED
PRE-TRIAL ORDER

At a conference held under Rule 16 F.R.C.P. by direction of William M. Byrne, Judge, the following admissions and agreements of fact were made by the parties and require no proof:

1. Plaintiff is a California corporation and is a resident of the Southern District of California, Central Division.

2. Plaintiff was on October 22, 1951, and has ever since been and now is the owner of the real property and of the improvements thereon located in Eureka County, Nevada, and known as the Fish Creek Ranch.

3. On October 22, 1951, and at all times thereafter, said ranch was and is improved with four buildings which will be referred to in the trial in this cause as:

- (a) Bartholomae Cottage,
- (b) Office Building,

- (c) Mess Hall, and
- (d) Bunk House.

4. On October 22, 1951; October 28, 1951; October 30, [53] 1951; November 1, 1951, and November 5, 1951, the United States of America, acting by and through its executive agency, the Atomic Energy Commission, and acting under the express mandate of the Congress, performed experiments with high explosives commonly known as atom bombs or atomic weapons through nuclear detonations thereof within the State of Nevada at or near an isolated, closely guarded and secret site commonly known as Frenchman's Flat and officially known as the Nevada Proving Grounds, which site was about 65 miles northwest of Las Vegas and between 145 and 150 miles southeast of plaintiff's ranch.

5. Prior to October 22, 1951, the Atomic Energy Commission had determined that a continental test area was necessary for the conduct of nuclear explosive experiments and that the area now known as the Nevada Proving Grounds was desirable as a location therefor, and the President of the United States of America had established the Nevada Proving Grounds as an area for the testing of Atomic devices.

6. The experiments conducted between October 22, 1951, and November 5, 1951, consisted, in part, of detonating weapons containing fissionable and radioactive materials which created and caused

blast waves and air shock waves which could reach into and bounce or rebound from atmospheric layer elevations which surround the earth and which are defined as (1) the Troposphere, an air mass layer within the area from the earth's surface to an elevation of 6 miles; (2) the Ozonosphere, an air mass layer between 25 and 40 miles above the earth's surface, and (3) the Ionosphere, an air mass layer 50 or more miles above the earth.

7. The United States, through previous experiments made by the Atomic Energy Commission, knew that these shock waves were capable of extreme, erratic and uncontrollable destruction and property damage; [54] that similar (though not necessarily the same intensity of) explosive tests had caused widespread damage for which it had assumed liability in reports to Congress and for which Congress had appropriated funds for payment.

Issues of Fact to Be Tried

1. The nature and extent of the damages to plaintiff's property.
2. The cause of such damage.
3. The liability of the United States for such damage.
4. The methods employed by the Atomic Energy Commission in conducting such experimental detonations.

Issues of Law

1. Did the activities of the persons conducting such experimental detonations constitute an actionable tort for which the United States is liable under Title 28, Section 1346(b) U.S.C.A.?

2. Is the United States excepted and excused from liability by virtue of the provisions of Title 28, Section 2680(a) U.S.C.A.?

3. Is the doctrine of *res ipsa loquitur* applicable?

4. Did the activities of the persons conducting such experimental detonations constitute an actionable taking for which the United States is liable under the Fifth Amendment to the Federal Constitution and Title 28, Section 1346 (a) (2) and the [55] provisions of Title 42, Section 1806 (a) (1) U.S.C.A.?

5. Did the activities of the persons conducting such experimental detonations with the intention and purpose of determining what damage would occur as the express result of such ultra-hazardous activity create an absolute liability, contractual in its nature, so as to constitute an actionable liability for unliquidated damages in a case not sounding in tort under Title 28, Section 1346 (a) (2) U.S.C.A.?

6. Did the reports by the Atomic Energy Commission of damages resulting from conducting of similar experimental detonations at the Nevada Proving Grounds to the Congress with the request

that the Congress approve such agency's payment of damages to those whose property had been damaged constitute a recognition and approval by the Congress of liability of the United States for damages directly arising out of and caused by such experimental detonations?

The foregoing admissions of fact have been made by the parties in open Court at the Pre-Trial Conference; and issues of fact and law being thereupon stated and agreed to, this Court makes this Order which shall govern the course of the trial unless modified to prevent manifest injustice.

Dated: January 3, 1955.

/s/ WM. M. BYRNE,
Judge of the United
States District Court.

The foregoing Pre-Trial Order is hereby approved.

/s/ IRL DAVIS BRETT,
Attorney for Plaintiff.

LAUGHLIN E. WATERS,
United States Attorney;

By /s/ ANDREW J. WEISZ,
Assistant United States
Attorney.

[Endorsed]: Filed January 3, 1955. [56]

[Title of District Court and Cause.]

AMENDMENT TO ANSWER

Defendant, United States of America, leave of court having been obtained, amends its answer herein as follows:

By adding immediately after paragraph 3 of the portion of answer relating to Count two (Tort Claim) the following:

For a Further Distinct and Separate Answer to Counts One and Two of Plaintiff's Complaint on File Herein, Defendant Alleges:

I.

That the detonations of atomic materials specified in counts one and two of plaintiff's complaint took place in the performance of a discretionary function or duty on the part of the Atomic Energy Commission, an agency of the United States of America, [57] and therefore plaintiff's claim may not be heard by this court nor recovery be had thereon, pursuant to Section 2680 of Title 28, United States Code.

Dated: This 8th of March, 1955.

LAUGHLIN E. WATERS,
United States Attorney;

MAX F. DEUTZ,
Assistant U. S. Attorney,
Chief, Civil Division;

/s/ ANDREW J. WEISZ,
Assistant U. S. Attorney,
Attorneys for Plaintiff.

It Is So Ordered:

This 8th day of March, 1955.

/s/ WM. M. BYRNE,
United States District Judge.

Receipt of copy acknowledged.

[Endorsed]: Filed March 8, 1955. [58]

[Title of District Court and Cause.]

MEMORANDUM OF DECISION

Plaintiff, a California corporation, brings this action for damages to certain buildings located on land owned by the plaintiff and known as Fish Creek Ranch in Nevada. On October 22, 1951, through November 5, 1951, the United States, acting through its executive agency, the Atomic Energy Commission, performed experiments with atomic energy and nuclear detonations. These detonations took place about 150 miles southeast of the plaintiff's ranch at a site known as Frenchman's Flat, and allegedly caused the damage to the plaintiff's buildings.

The complaint is in four counts; the first two counts sounding in negligence, the third in liability without fault, and the fourth in eminent domain. The jurisdiction of this court is asserted to derive from 28 U.S.C.A., Sections 1346(b) and 1346(a)(2).

The evidence is not sufficient to support a finding [60] of negligence¹ nor a finding that the detonations were the proximate cause of the damage complained of; however, it is not necessary to rest decision on that ground. When Congress adopted the Tort Claims Act (28 U.S.C.A. 1346(b)) waiving the Government's immunity from actions for injuries to person or property occasioned by the tortious conduct of its agents, it provided that the waiver would not apply to "(a) Any claim * * * based upon the exercise or performance or the failure to exercise or perform a discretionary function or duty on the part of a federal agency or an employee of the Government, whether or not the discretion involved be abused." (28 U.S.C.A. 2680). It is clear that if plaintiff's claims are based on the performance by defendant of a discretionary function, counts one, two and three must fall.

¹In count two the plaintiff relies upon the doctrine of *res ipsa loquitur*. This doctrine does not apply unless (1) defendant had exclusive control of the thing causing the injury and (2) the accident is of such a nature that it ordinarily would not occur in the absence of negligence by the defendant. *Escola v. Coca-Cola Bottling Co. of Fresno*, 24 Cal. 2d 450, 150 P. 2d 436. The injury complained of in the instant case is the cracked plaster in the buildings located on the plaintiff's ranch. In the first place the evidence does not establish what "thing" caused the injury and in the second place the "accident" is of such a nature that it ordinarily occurs in the absence of negligence, i.e., from temperature changes and earth temblors. The doctrine of *res ipsa loquitur* has no application in situations such as this.

Prior to the detonations complained of, the Atomic Energy Commission had determined that a continental testing area was necessary to conduct experiments with atomic energy. For that purpose the President of the United States established the Nevada Proving Grounds for the tests. The experiments conducted between October 22, 1951, and November 5, 1951, consisted in part, of detonating weapons [61] containing fissionable and radioactive materials. The detonations caused blast waves and air shock waves which could reach into and bounce or rebound from atmospheric layer elevations that surround the earth. These shock waves are capable of erratic behavior and at the time of the acts complained of they could not be completely controlled.

Each test series, including the one involved here, emanates from the Los Alamos Laboratory. Initially, a description of the test series is included in the annual Laboratory Program, for the approval of the Atomic Energy Commission. Thereafter, a more detailed program is prepared in the Los Alamos Laboratory. It is then approved by the Santa Fe Operations Office, by the Division of Military Applications of the Atomic Energy Commission, and by the Atomic Energy Commission. Through the National Security Counsel, the Atomic Energy Commission receives the approval of the President to detonate the devices and expend the nuclear material. The test manager is then appointed and given authority to conduct the series. Thereafter, the test manager directs the test organ-

ization with regard to the schedule of operations to be followed, the sequence and dates of detonations and the procedure involved. The decision to detonate at a particular time is made by the test manager, upon the recommendation of a board of experts, each one foremost in his particular field, so that detonation can be accomplished with maximum safety.

As a part of this program to insure maximum safety it is necessary to determine atmospheric conditions so that the radius of the blast may be ascertained. As yet it is impossible to determine conditions at high altitudes with [62] absolute accuracy. Dr. Cox, a member of the team conducting the tests, devised a method of detonating high explosives approximately one hour prior to the blast and scaling up the reading in order to predict the expected blast pressure at the higher altitudes. This was accomplished by taking readings from microbarographs as close to the time of the blast as possible. Eight microbarographs, the available supply in the country, were secured and placed at strategic points according to the judgment of Dr. Cox. The readings were given to the panel of experts who weighed the information and advised the test manager as to blast safety. The test manager then made the decision whether to detonate or not.

The basis of the plaintiff's claims in the first two counts is the asserted negligence of Dr. Cox in placing all of the available microbarographs in the direction of the more populated areas of Las Vegas,

Henderson and Boulder City, and not placing one in a "northerly direction" towards the plaintiff's ranch. The plaintiff contends that the discretion exercised by Dr. Cox and his associates at the test site was not of the discretionary character stated to be not actionable by Section 2680.

In *Dalehite v. United States*, 346 U. S. 15 (1953), the Supreme Court discussing the scope of the discretionary function protected by Section 2680 said at page 35 "* * * the 'discretionary function or duty' that cannot form a basis for suit under the Tort Claims Act includes more than the initiation of programs and activities. It also includes determinations made by executives or administrators in establishing plans, specifications or schedules of operations. Where there is room for policy judgment and decision there [63] is discretion. It necessarily follows that acts of subordinates in carrying out the operations of government in accordance with official directions cannot be actionable."

It would appear that the experimental activity involved here is precisely the type of function or duty which Congress did not intend to be actionable under the Tort Claims Act. Here we have a program authorized at the very highest level of Government, to be carried out for the public benefit with important decisions to be made all through the preparation until the final detonation. To say that the decisions made in carrying out the basic plan approved by the President are not discretionary

would be clearly contrary to the intent of Congress and the principles enunciated in the Dalehite case.

There is an additional reason why there can be no recovery on count three which is founded on a theory of absolute liability without fault where the Government is engaged in an ultra-hazardous activity. In Dalehite v. United States, supra, the court stated that liability under the Tort Claims Act does not arise by virtue of the United States engaging in an extra-hazardous activity and that it is to be invoked only on a negligent or wrongful act or omission of an employee. See also United States v. Ure, F. 2d (C.A. 9, Sept., 1955); Rayonier Incorporated v. United States, 225 F. 2d 642 (C.A. 9).

In count four the plaintiff alleges that the United States intentionally took and acquired the right and privilege to shake and damage his property as an unavoidable result of its intentional detonating of atomic bombs; that this action was a taking for public use within the meaning of the Fifth Amendment to the Federal Constitution, and is [64] therefore compensable. "Property is taken in the constitutional sense when inroads are made upon an owner's use of it to an extent that, as between private parties, a servitude has either been acquired by agreement or in course of time." United States v. Dickinson, 331 U. S. 745, 748. It is the intent of the party who, it is claimed, has asserted a proprietary interest which is the determining factor. this intent may be manifested by a single deliberate

act or it may be inferred by continuous or repeated acts, but a single isolated and unintentional act of the United States resulting in damage or destruction of property is not a taking in a constitutional sense. *Harris v. United States*, 205 F. 2d 765 (C.A. 10). It follows that even if we were to assume that the damage which occurred to plaintiff's property in October, 1951, resulted from the detonation of an atomic bomb, it was not a taking for public use for which compensation was payable under the Fifth Amendment.

Judgment will be for the defendant. Counsel for the defendant will prepare, serve and lodge findings and judgment in accordance with local rule 7.

Dated, Los Angeles, California, November 2, 1955.

/s/ WM. M. BYRNE,

United States District Judge.

[Endorsed]: Filed November 2, 1955. [65]

[Title of District Court and Cause.]

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter having come on regularly for trial on the 10th and 11th days of May, 1955, before the Honorable William M. Byrne, Judge presiding; plaintiff having been represented by Mize, Kroese, Larsh & Mize and Irl Davis Brett, by Irl Davis Brett, defendant having been represented by

Laughlin E. Waters, United States Attorney; Max F. Deutz and Andrew J. Weisz, Assistants United States Attorney, by Andrew J. Weisz; and the Court having received evidence, both oral and documentary, and having considered briefs of counsel, and having been fully advised in the premises, makes the following:

Findings of Fact

I.

That this is a suit of a civil nature against the United States of America as defendant, wherein jurisdiction of this Court is allegedly derived from the provisions of Section 1346(a) (2) and [66] 1346(b) of Title 28, United States Code.

II.

That plaintiff, a California corporation, at all times involved herein, was the owner of property known as the Fish-Creek Ranch, which property is located in the State of Nevada approximately 150 miles northwest of Nevada Proving Grounds, commonly known as Frenchman's Flat.

III.

That in the period of time between October 22, 1951, and November 5, 1951, the United States, acting through its executive agency, the Atomic Energy Commission, performed experiments involving nuclear detonation at the Nevada Proving Grounds. The said experimentation caused the re-

lease of energy, one aspect of which was the appearance of blast or shock waves.

IV.

That during or about the period above referred to, plaster in the buildings on the land of plaintiff showed evidence of cracking.

V.

The atomic experimentation during the period above referred to comprised a number of tests, series of which emanate originally from the Los Alamos Scientific Laboratory. The description of test series is included in the Annual Laboratory Program and is approved by the Atomic Energy Commission. Thereafter, a more detailed testing program is prepared at the Los Alamos Scientific Laboratory, and is then approved by the Santa Fe Operations Office of the Atomic Energy Commission, by the Division of Military Applications of the Atomic Energy Commission, and by the Atomic Energy Commission itself. Through the National Security Council, the Atomic Energy Commission receives approval of the President of the United States to expend the nuclear material involved and to detonate the devices containing the nuclear material. [67]

VI.

Prior to the series involved herein, the Atomic Energy Commission had determined that a continental testing area was necessary in order to further experimentation of atomic energy. For that

purpose, the President of the United States established the Nevada Proving Grounds as the area in which continental testing might take place.

VII.

The President and the Atomic Energy Commission authorized the detonation of the devices used in the testing series that took place during the period involved herein, and directed that the testing take place at the Nevada Proving Grounds.

VIII.

After the approvals and authorizations described above, a Test Manager is, and was in this instance, appointed and given authority to conduct the series. The Test Manager directs the testing organization with regard to the schedule of operations to be followed, the sequence and dates of detonations, and the procedures involved.

IX.

In the conduct of the atomic experimentation, as described above, the quantity of detonative material in the devices is fixed at the highest executive level. The testing organization is instructed to accomplish the experimentation with maximum safety to the public. The variant factor insofar as public safety is concerned is weather.

X.

The Nevada Proving Grounds was chosen as a continental testing area by reason of excellent weather conditions and sparse population. Weather

conditions will effect the propagation of shock or blast waves. These waves emanate from the center of detonation in every direction, their energy becoming less effective upon any [68] particular object as the distance from detonation center increases. However, the waves may be bent down due to atmospheric conditions at higher elevations in the atmosphere. At the state of scientific progress attained at the time of the test series here in question, it was impossible to predict whether and where such bending might occur.

XI.

Dr. Cox, a member of the team conducting the tests, devised prior to the test series here in question a method of detonating high explosives approximately one hour prior to the nuclear detonation, and recording the effect of such explosions upon an instrument known as a microbaragraph. Eight microbaragraphs, the entire available supply in the United States, were secured and placed at strategic points according to the judgment of Dr. Cox. Upon detonation of the high explosive, Dr. Cox secured the microbaragraph readings, and scaled up the readings in order to predict the expected blast pressures from the atomic detonation at the microbaragraph locations. The eight microbaragraphs were placed in heavily-populated areas, none of which were in the vicinity of plaintiff's ranch.

XII.

The testing organization comprised a board of experts, each one foremost in his particular field, who advised the Test Manager with regard to optimum conditions of safety for detonation. With regard to each detonation in the series here involved, the board of experts was fully informed as to weather conditions, the location of the micro-barographs, and the scaled-up readings predicting blast pressures to be expected. The board approved detonation in each instance.

XIII.

The Test Manager, during the series here involved, had the information that the board of experts had, and the benefit of its [69] recommendation. In approving the detonation at the particular times and under the particular weather conditions then prevailing, the Test Manager determined that the testing was taking place under conditions optimal for the public safety under all the circumstances.

XIV.

The purpose of each test series is to determine the efficiency of the device used and efficacy of the detonation produced through use of the atomic elements. In every instance, it is the intent of the Atomic Energy Commission and the test organization to, insofar as is possible, confine the effects of the detonation to the Nevada Proving Grounds. During the period here involved, the Court finds that every precaution for the public's safety was

exercised, commensurate with the task to be performed, and the equipment and scientific knowledge available.

XV.

Upon the evidence before it, this Court cannot find that any officer or employee of the United States was negligent in the performance of his duties relating to atomic experimentation, or that the atomic detonations were the proximate cause of the damage to plaintiff's property. The Court finds that blast waves released from atomic detonations during the period in question may have reached the property of plaintiff on one or two occasions during the period involved. The Court further finds that as to each such blast wave from the atomic detonation reaching the land of plaintiff, if any, the shock wave was uncontrollable and unpredictable under the circumstances obtaining.

Conclusions of Law

I.

That the activity here involved, the detonation of experimental nuclear devices, requires the exercise of discretionary functions within the meaning of the term used in Section 2680 of [70] Title 28, United States Code, and sovereign immunity obtains for that reason.

II.

That plaintiff cannot recover on the theory of liability without fault, as such liability is precluded under the Federal Tort Claims Act.

III.

That there was not a taking of the property of the plaintiff for a public use within the meaning of the Fifth Amendment to the Constitution of the United States.

Let Judgment be entered in accordance herewith.

Dated: This 22nd day of December, 1955.

/s/ WM. M. BYRNE,

United States District Judge.

Affidavit of service by mail attached.

Lodged November 28, 1955.

[Endorsed]: Filed December 22, 1955. [71]

United States District Court, Southern District of
California, Central Division

Civil No. 14795-WB

BARTHOLOMAE CORPORATION, a Corpora-
tion, Plaintiff,

vs.

UNITED STATES OF AMERICA,
Defendant.

JUDGMENT

The Court having previously filed its Findings of Fact and Conclusions of Law herein,

It Is Ordered, Adjudged and Decreed that the plaintiff recover nothing by reason of its complaint

on file herein, and that the defendant have judgment for its costs of suit in the sum of \$175.00.

Dated: This 22nd day of December, 1955.

/s/ WM. M. BYRNE,

United States District Judge.

Lodged November 28, 1955.

[Endorsed]: Filed December 20, 1955.

Docketed and entered December 22, 1955. [73]

[Title of District Court and Cause.]

NOTICE OF APPEAL

Notice Is Hereby Given that Bartholomae Corporation hereby appeals to the United States Court of Appeals for the Ninth Circuit from that certain judgment docketed and entered herein on December 22, 1955, that the plaintiff herein recover nothing by reason of its complaint on file herein and that the defendant United States of America have judgment for its costs of suit in the sum of \$175.00.

Dated: This 16th day of February, 1956.

MIZE, KROESE, LARSH &
MIZE,

IRL DAVIS BRETT,

By /s/ IRL DAVIS BRETT,
Attorneys for Appellant.

Receipt of copy acknowledged.

[Endorsed]: Filed February 16, 1956. [74]

[Title of District Court and Cause.]

STATEMENT OF POINTS ON APPEAL

The plaintiff-appellant, Bartholomae Corporation, makes the following statement of points upon which it intends to rely upon appeal:

1. The District Court erred in adjudging that the United States was immune from liability for the damage to appellant's property caused by the acts of its agents under Title 28, U.S.C.A., Section 1346(b) upon the ground that such acts were excluded by the provisions of Title 28, U.S.C.A., Section 2680(a).

2. The District Court erred in adjudging that the acts of the agents of the United States did not constitute a taking of an interest in appellant's property for which the United States was liable under the provisions of the Fifth Amendment to the Federal Constitution and of Title 28, U.S.C.A., Section 1346(a).

3. The District Court erred:

(a) In adjudging that appellee was not liable to appellant under the theory of absolute liability pursuant to Title 26, U.S.C.A., Section 1346(a) (2) and Title 28, U.S.C.A., Section 1346(b) [79] by reason of the unique and exceptional circumstances of this case.

(b) In adjudging that appellee was not liable to appellant under the theory of *res ipsa*

loquitur under Title 28, U.S.C.A., Section 1346(b).

4. The District Court erred in refusing to find and adjudge the amount in money to which appellant was entitled from appellee by reason of the injury to appellant's property resulting from the acts of appellee's agents and in refusing to adjudge that appellant recover such sum and its costs from the United States.

Dated: February 27, 1956.

MIZE, KROESE, LARSH &
MIZE, and

IRL DAVIS BRETT,

By /s/ IRL DAVIS BRETT,
Attorneys for
Plaintiff-Appellant.

Receipt of copy acknowledged.

[Endorsed]: Filed February 29, 1956. [80]

[Title of District Court and Cause.]

EX PARTE ORDER EXTENDING TIME FOR
FILING THE RECORD ON APPEAL AND
DOCKETING THE APPEAL

(Rule 73(g) F.R.C.P.)

Upon ex parte application of Irl Davis Brett, one of counsel for plaintiff-appellant, and it appearing

to the Court that the notice of appeal was filed herein on February 16, 1956, said plaintiff-appellant ordered a reporter's transcript of the testimony in this cause (omitting all argument except incidental argument in connection with rulings made by the Court in the course of the hearing) from Thomas B. Goodwill, an official court reporter for this Court, but that such reporter has been unable to, and will be unable to, complete the transcript thereof and filing with the clerk of this Court within 40 days from and after February 16, 1956, and it further appearing that plaintiff-appellant has complied with Rule 75(a) F.R.C.P. by serving and filing with the clerk of this Court its designation of the contents of the record on appeal and its statement of points on appeal and that such delay as will be caused by the inability of said court reporter to prepare, transcribe and deliver such reporter's transcript within the 40-day [82] period prescribed by Rule 73(g) F.R.C.P., and good cause appearing therefor;

It Is Ordered that the time for filing the record on appeal and docketing the appeal with the Circuit Court of Appeals for the Ninth Circuit by plaintiff-appellant be and it is hereby extended to and including May 15, 1956.

Dated: March 5, 1956.

/s/ WM. M. BYRNE,

United States District Judge.

[Endorsed]: Filed March 5, 1956. [83]

In the United States District Court, Southern
District of California, Central Division
No. 14,795-WB—Civil

BARTHOLOMAE CORPORATION, a Corpora-
tion,

Plaintiff,

vs.

UNITED STATES OF AMERICA,
Defendant.

Honorable Wm. M. Byrne, Judge Presiding.

REPORTER'S TRANSCRIPT OF
PROCEEDINGS

Los Angeles, California

Appearances:

For the Plaintiff:

MIZE, KROESE, LARSH & MIZE, by
IRL D. BRETT.

For the Defendant:

LAUGHLIN E. WATERS,
United States Attorney;
MAX F. DEUTZ,
Assistant United States Attorney,
Chief, Civil Division;
ANDREW J. WEISZ,
Assistant United States Attorney, by
ANDREW J. WEISZ.

Tuesday, May 10, 1955—9:45 A.M.

The Court: The clerk will call the calendar.

The Clerk: No. 14,795-WB Civil, Bartholomae Corporation versus United States of America, for trial.

Mr. Brett: Ready for the plaintiff.

Mr. Weisz: Ready for the defendant.

The Court: You may proceed.

Mr. Brett: If your Honor please, I am aware of the fact that your Honor has lived with this case for some time and has both memoranda and other matters referring to it. Before I present any evidence, it would be helpful if I make just a brief statement of what we expect to prove.

Insofar as causation is concerned, we expect to prove it by a process of elimination, that is, we expect to show that on certain dates the United States, through its agency, the Atomic Energy Commission, detonated certain nuclear weapons at the area in Nevada known as Frenchman's Flat.

There was a very great disturbance in the area of this ranch, which lies about 140 miles north and slightly east of the place at which the detonation took place that violently shook the buildings; that there was in that area no other physical or man-made circumstance from which it could be reasonably determined that such would be the causation; in other words, there was no railroad immediately near, there [6*] were no roads as such that were

*Page numbering appearing at top of page of original Reporter's Transcript of Record.

close enough upon which there could have been any heavy travel, and that there was no earthquake or any other physical disturbance known at that time; and that it was of such nature that in one instance it threw one of the occupants of one of the buildings to the floor, and that it resulted in a severe wrenching of the buildings and caused damages which caused plaster to crack. We will show this by this process:

That prior to these occasions, a witness, Mr. Norwood, who will subsequently testify, was in the area and in the buildings making a very detailed examination of them in connection with prospective improvements which the owner intended to make.

Mr. Norwood is a builder located here in San Marino, in this county, and he had gone over all of the buildings very, very carefully at that time.

That as a part of that examination, as he discovered and as he will be able to testify, there were no such injuries to the buildings, there were no such cracks.

We will show by the depositions of the superintendent who was a resident upon the property, and his wife, who was also a resident upon the property and employed by this plaintiff corporation, that these severe shakings occurred, and that these cracks developed at that time.

Then we will show by Mr. Norwood that he again examined [7] the buildings the following spring and that he was able to discover these cracks, and so forth.

We also will show by the evidence that Mr. Rob-

ert W. Millard, civil engineer, licensed to practice in Nevada, that he was residing on the property from time to time before this occurrence took place, but not at that date, doing certain engineering work and surveying work in that locality, and as such became familiar with the property and the manner in which it was kept up, and that he also examined the property at the time Mr. Norwood did, after the atomic explosions had taken place. He also was present and directed the taking of the photographs which we have and which we will introduce in evidence. And in addition to that, he has carefully charted all of the cracks which have taken place in the various buildings.

We will also introduce a drawing which he has made to scale showing the location of the buildings and the character of them, and so forth.

By Mr. Norwood we will show that these buildings were especially well built, they are something far out of the ordinary, certainly for that locality; and that the buildings have been damaged and divided by virtue of the cracking of the plaster.

We will show through Mr. Millard that he has made a study of official records of the temperatures at the nearest [8] two points to that area, one being directly at the area itself, at which the United States maintained a station, where a station was maintained and from which official records were kept by the United States Weather Bureau, and the other one being nearest to Mr. Millard's home at Ely, Nevada, which is north and east of this property. He had made a chart for some ten-year

period from the time the buildings were built and up through the occasion of these explosions and had made a study of the effects of temperature changes and will state his opinion and the basis for it, as to whether or not what has occurred is a result of temperatures.

Mr. Norwood will testify as to the type and character of building construction and as to whether what has occurred has any relation to that.

We will also offer in evidence, and ask the court to take judicial notice of it, the official report, the 13th semi-annual report of the Atomic Energy Commission, particularly that part thereof which reports the effects of the atomic explosions, and which will be referred to in and annexed to the pretrial memorandum.

We also have another document which was issued by the Atomic Energy Commission which refers to the blast effects and will offer that in evidence, and will ask the court to particularly notice the contents thereof, particularly with reference to blast damage. [9]

We will introduce in evidence a map of the State of Nevada through which we will show the locations of these properties.

We have and we will offer in evidence certified copies of portions of the newspaper reports of the Ely Daily Times, a daily newspaper published nearest to this property, at Ely, Nevada, for the days during which these atomic tests were being made at Frenchman's Flat in October and November, 1951, for the limited purpose of showing what informa-

tion was being given to the public of the fact that there were atomic explosions, not for the text of the newspaper. That is in connection with the depositions of the witnesses Seale, to lay the foundation for their knowledge that there were to be atomic explosions, the reports in this newspaper.

We also will show by portions of the depositions of three Government witnesses, Dr. Alvin Cushman Graves, Dr. Everett Cox and Brigadier General Kenneth E. Fields, that save only for the limited right to determine the time when the explosions were to be given, after making weather tests and other tests, there was no authority vested in any of the persons who were conducting the tests at Frenchman's Flat to change or modify the directions, both as to the amount of nuclear force to be utilized, of the type and character of the test, that is, as to whether it was on the ground or up above, or any other of the details of the operation, save [10] only the matter of the time limit, and that, in that connection, any effects which would be produced therefrom at a distance such as this would be either in the ozonosphere, which lies some 35 miles up above the ground level, or in the ionosphere, which is at an elevation considerably higher, 50 or more miles up in the air, up above the surface; that it would only be the effects in those areas that could travel this distance.

Now, it was anticipated that the explosions which were made would reach those areas and that there was little, if any, information which was known to man as to what would be the results of these explo-

sions reaching those areas; that it was known to be erratic.

The closest form of test which was then known and then practiced was to use testing instruments which were known as microbarographs. If, for any reason, your Honor, I mispronounce some of these matters, it is simply because I don't know any better. At least that is my pronunciation. It is spelled m-i-c-r-o-b-a-r-o-g-r-a-p-h, which are instruments which may be set and which will, through operation of a needle upon paper, much as I take it, as the testing instrument which they use in connection with earthquakes, show the intensity of the force at that particular point.

Now, there were only eight of those instruments available in the United States at that time, according to the testimony [11] of Dr. Cox, and they did not place any instrument toward the north, which is the direction of our property. That upon reading from those instruments, plus tests from air balloons which did not reach these higher areas, they endeavored to arrive at conclusions such as they did arrive at, with respect to weather conditions and when to detonate these nuclear weapons.

I believe that generally outlines the plaintiff's case.

I don't propose at this time to argue our theory of law. I take it that that will be appropriate at a later stage.

I wonder, your Honor, in this particular case, if it would be approved by you, if I did this, that as to one witness, Mr. Millard, that I place him on the

stand first to establish locations and descriptions and then withdraw him so that I can then offer the depositions of persons who were there at those times, and then put him back on the stand. .

The Court: Yes.

Mr. Brett: Mr. Millard, will you take the stand?

ROBERT W. MILLARD

called as a witness by and on behalf of the plaintiff, having been first duly sworn, testified as follows:

The Clerk: What is your full name?

The Witness: Robert W. Millard. [12]

(A short intermission followed.)

Mr. Brett: Our delay is simply this, your Honor, that we are examining another map that the Government had, to see whether or not——

The Court: All right.

Mr. Brett: I will ask the clerk to mark this as Plaintiff's Exhibit. Will the plaintiff's designations be by number, your Honor? Is that the practice?

The Court: Yes.

Mr. Brett: Or by letter, which is it?

The Court: By number.

Mr. Brett: I will ask the clerk to mark a certain map here as Exhibit No. 1.

(Said map was marked Plaintiff's Exhibit No. 1 for identification.)

Direct Examination

By Mr. Brett:

Q. Mr. Millard, where do you reside?

(Testimony of Robert W. Millard.)

A. I reside at Ely, Nevada.

Q. And how long have you resided there?

A. I was born in Ely, Nevada. I have lived there all my life.

Q. Are you practicing your profession in that locality?

A. I am practicing the profession of civil engineering.

Q. And you are practicing alone or with someone else? [13]

A. I am practicing in partnership with my father under the name of F. W. Millard & Son, Mining and Civil Engineers.

Q. Is that "Millard," is that the correct pronunciation? A. We pronounce it "Millard."

Q. Now, Mr. Millard, are you licensed to practice the profession of Civil Engineering, by the State of Nevada?

A. Yes, I am a graduate of the University of Nevada. I received my Bachelor of Science in civil engineering. I am licensed by the State of Nevada, holding Professional License No. 217. I am also licensed in the State of Utah. I have a professional engineering license in Utah, No. 1284.

Q. When did you commence the practice of civil engineering in Nevada?

A. I commenced following graduation in June, 1933.

Q. And you have been living in Ely and practicing your profession in and out of Ely and within the State of Nevada ever since that time?

A. With the exception of a period during the

(Testimony of Robert W. Millard.)

war. I left in August of 1941, and was gone until May of 1946, in World War Two.

Q. And has the practice of your profession taken you throughout the State of Nevada?

A. Yes. We practice throughout the State of Nevada and [14] do some work in Utah, and as U.S. mineral surveyers, we work in California.

Q. Now, do you know the location of the property known as the Bartholomae Fish Creek Ranch?

A. Yes. I am very closely associated with that operation, having been their engineer since June of 1946.

Q. During the course of your employment by them and in practice of your profession, have you had occasion to be at the ranch?

A. I have stayed at the ranch a good many days and nights since 1946.

Q. And have you been in all of the various buildings, improvements of the ranch?

A. Yes, I have been in and out of all the buildings. I have lived in two of them for a good many nights and days. I have worked in the Engineering Building and I have taken a great many meals in the cookhouse.

Q. Are you familiar generally with the location of what is known as the Nevada Proving Grounds?

A. Yes, I know the general area of the Nevada Proving Grounds.

Q. And that is sometimes known as Frenchman's Flat and Yucca Flat?

A. Yucca Flat and Frenchman's Flat.

Q. Will you step down here for just a minute,

(Testimony of Robert W. Millard.)

please? [15] I have here a map of the State of Nevada which has been marked by the clerk as Plaintiff's Exhibit No. 1 for identification. Will you put it upon the blackboard, please, with thumbtacks?

A. Yes, sir.

(Said map was attached to the blackboard.)

Mr. Brett: Now, the clerk has supplied me with a red pencil and let us not forget to give it back to him, Mr. Millard.

Q. Now, Mr. Millard, will you examine Plaintiff's Exhibit No. 1 for identification and state whether or not it shows the location of your residence and place of business, Ely, Nevada?

A. Yes. It is an official map as put out by the State Highway Department under the date of 1954. It shows my place of residence at Ely.

Q. Will you put a red arrow there with the figure "1" to show the location of Ely?

A. (The witness wrote the red figure "1" within a circle and drew an arrow lead-line in connection therewith on Exhibit No. 1.)

Q. Now, can you locate the Bartholomae Fish Creek Ranch?

A. It is not so designated or marked on the map. But I can show it here. [16]

Mr. Brett: Mr. Millard, I am a little hard of hearing. I don't know about the court, but if you wouldn't object, I would like to have you speak up a little louder so I can hear you.

Will you designate the location of the Bartholomae Fish Creeek Ranch by a figure "2"?

(Testimony of Robert W. Millard.)

(The witness wrote a red figure "2" within a circle and drew an arrow lead-line in connection therewith on said Exhibit No. 1.)

Q. (By Mr. Brett): Now, can you locate on Exhibit No. 1 for identification the general location of the Nevada Proving Grounds?

(The witness indicates on said map.)

And will you indicate it with the figure "3"?

A. (The witness writes a red figure "3" within a circle and drew an arrow lead-line in connection therewith on said Exhibit No. 1.)

Q. Now, Mr. Millard, what was the nearest mode of public access to the headquarters of the Bartholomae Fish Creek Ranch in 1951?

A. The nearest mode of transportation? Is that your question?

Q. Yes.

A. The nearest mode was the U.S. Highway 50 which is 10 miles north of the Fish Creek [17] Ranch.

Q. Is that disclosed on Plaintiff's Exhibit No. 1 for identification?

A. Yes, U.S. 50 is shown on the exhibit.

Q. And will you indicate that with an arrow and figure "4"?

A. (The witness wrote the red figure "4" within a circle and drew an arrow lead-line in connection therewith on said Exhibit No. 1.)

(Testimony of Robert W. Millard.)

Q. Does U.S. 50 continue easterly and northerly to Ely, Nevada?

A. It continues easterly to Ely.

Q. Now, you have said that is 10 miles north of the headquarters of the Fish Creek Ranch?

A. Yes, that is true. The highway is 10 miles north of the ranch.

Q. And what means are there for reaching such headquarters from U.S. Highway 50?

A. The only means is by county road.

Q. Is that a dirt road?

A. That is a dirt road.

Q. Is that shown upon Plaintiff's Exhibit No. 1, the map?

A. Yes, that is shown.

Q. Sir?

A. Yes, that is shown. [18]

Q. Now, will you indicate that road with the figure "5"?

A. (The witness wrote the red figure "5" within a circle and drew an arrow lead-line in connection therewith on said Exhibit No. 1.)

Mr. Brett: Now, you may resume the witness stand.

(The witness returned to the witness chair.)

Q. Have you prepared a drawing or a chart showing the location and the dimensions, etc., of the improvements at the headquarters of the Bartholomae Fish Creek Ranch?

A. Yes, I have prepared a drawing to scale which shows the buildings at Fish Creek. I believe that is it (indicating document).

(Testimony of Robert W. Millard.)

Q. Will you step down here for just a minute and check it out?

(The witness complies with the request of counsel.)

Mr. Brett: I will ask the clerk to mark this drawing as Plaintiff's Exhibit No. 2 for identification.

(Said document was marked as Plaintiff's Exhibit No. 2 for identification.)

Mr. Brett: Would it be of any assistance to your Honor if you had one before you?

The Court: Well, no.

Mr. Brett: May I inquire, do we have that at an angle where your Honor can see it on the [19] board?

The Court: Yes, I can see it all right.

Mr. Brett: Thank you.

Q. Now, Mr. Millard, you have prepared this for the purpose of this trial?

A. Yes, I prepared this map for the purpose of this trial.

Q. And you prepared it on the site of the property? A. No. I prepared it in Ely.

Q. From notes you had made?

A. From surveys we had made at the ranch.

Q. It is based, then, upon surveys you had made?

A. Yes, sir.

Q. Then, will you generally describe to the court what this drawing illustrates?

(Testimony of Robert W. Millard.)

A. This drawing generally illustrates the entrance road to the headquarters ranch——

Q. Will you point that out?

A. ——which comes in from the south; the dirt road that we spoke of a moment ago, circles around the advanced area of the ranch to the south side of the ranch and then comes into the ranch from the south. This is the general service or access road to the headquarters buildings. It continues on up into the shop area, and so forth.

Q. I will have again to ask you to speak up.

A. Excuse me. The first building that you [20] encounter to your left as you drive in on the gravel access road is what is known as Building No. 2, which is the pumphouse, generator building and pumphouse.

The next building is a building on your right, Building No. 1, which is the foreman's cottage. It has a flagpole area and a circular drive in front of the building.

Q. What did you say this Building No. 1 was?

A. Building No. 1 is the pumphouse and generator building.

The Court: Just a moment. Didn't you refer to that one before as No. 2 and the foreman's house as No. 1?

The Witness: Yes. That is No. 2. Did I misstate it?

The Court: You just said No. 1, now, but that is actually No. 2?

The Witness: That is Building No. 2.

(Testimony of Robert W. Millard.)

Mr. Brett: Well, I have examined the document. I see there is written on it, "Building No. 1 foreman's cottage." A. That is correct.

Q. Will you please proceed from there?

A. The buildings are numbered. The foreman's cottage is Building No. 1. The pumphouse is Building No. 2. The office is Building No. 3. The cookhouse is Building No. 4 and the bunk house is Building No. 5.

As you proceed north on this graveled road, you encounter the buildings, No. 3, the office; No. 4, the cookhouse, and [21] No. 5, the pumphouse and off into the ranch.

Q. (By Mr. Brett): Are the buildings to scale?

A. The buildings are drawn to scale, 1 inch to 10 feet.

Q. And that is an accurate reproduction, then, insofar as location and area of the buildings as they were in the fall of 1951, including October and November of 1951? A. That is true.

Mr. Brett: Now, with your Honor's permission I will withdraw the witness and now offer in evidence and read the depositions of Mr. and Mrs. Seale.

Will you step down, Mr. Millard?

(Witness withdrawn temporarily.)

The Clerk: I have a deposition of Arthur J. Seale. There is no mention of Mrs. Seale.

Mr. Weisz: They should both be in the same envelope.

Mr. Brett: They should both be in the same envelope. I haven't examined the record of the clerk. You do not have one of Mrs. Seale? Is it satisfactory to break this?

The Court: Yes. Break the seal. You may open it.

Mr. Brett: Here they are. The record discloses, your Honor, that in the envelope, the seal of which I have just broken with the court's permission, is a stipulation to take the depositions of Arthur J. Seale and Crystal B. Seale, before C. H. Higer, a notary public in and for the County [22] of Gem, State of Idaho, and the original depositions taken pursuant thereto before Mr. Higer, of Arthur J. Seale, a witness produced on behalf of Bartholomae Corporation, the plaintiff, and I find in this instance, your Honor, that the depositions are divided into two parts; one is the portion which are the direct interrogatories on the part of the plaintiff, and the second portion, before the same notary at the same time and the same witness are the cross-interrogatories by the Government; and then there is also the deposition before the same notary of Mrs. Seale, there being no cross-interrogatories insofar as she is concerned.

Would it be convenient if I would read the questions and ask counsel to take the stand and give the answers? Is that satisfactory?

The Court: Very well. Either way, whichever way you want to do it.

Mr. Brett: I am proceeding first with the direct examination of the witness Arthur J. Seale:

(Whereupon, the deposition of Mr. Arthur J. Seale was read on behalf of the plaintiff, as follows:)

DEPOSITION OF ARTHUR J. SEALE

Direct Examination

“Q. What is your name?

A. Arthur J. Seale.

Q. Where do you now reside?

A. 412 Tenth Avenue North, Nampa, Idaho. [23]

Q. Where did you reside during October and November of 1951?

(Please give the name of the ranch and describe its location.)

A. Fish Creek Ranch, Eureka, Eureka County, Nevada.

Q. By whom were you employed at that time?

A. Bartholomae Corporation.

Q. In what capacity were you employed during those months?

A. Superintendent of the Bartholomae ranches.

Q. When did you first commence your residence at the ‘Fish Creek Ranch’?

“A. July 15, 1951. About that. I went on the payroll the fifteenth. I don’t remember exactly when I moved to the ranch. Went on the payroll the 15th of July, 1951.

Q. Did you reside there continuously thereafter until your employment by Bartholomae Corporation terminated? A. Yes.

Q. When was that? A. July 15, 1952.

(Deposition of Arthur J. Seale.)

Q. What occupation was carried on at the 'Fish Creeek Ranch' during the period in which you were superintendent? [24] A. Raising of cattle.

Q. How many improved buildings were there at the headquarters of the ranch during the period of your residence there?

A. Ten or twelve buildings.

Q. Please describe them briefly as to:

(a) The location of each with reference to the entrance to the ranch headquarters and the center roadway;

(b) Their commonly used names.

A. Go in on the left side of the road. The first building was the light plant and the pumphouse. Next was the office building and our living quarters. Next one was the cook house, and then a bunk house. Next was the saddle room and the next was the saddle horse barn. Next was the warehouse and then the work horse barn off the road and the machine shed, and then the Sara cottage. Then going in again, across the road directly opposite the pumphouse and the light plant was the Bartholomae cottage, and next was the garage, and then another truck garage or machine shed. There is a chicken house across the road from the work-horse barn. Corrals around both barns.

Q. Do you remember two occasions when these buildings were shaken in either October or November of 1951? [25] A. Yes.

Q. What were the dates thereof?

(Deposition of Arthur J. Seale.)

A. I don't know. I don't remember.

Q. Had you received a shipment of cattle just before the first shaking occurred?

A. That is right.

Q. Please describe what happened and where you were when the first shaking occurred?

A. Well, we were bringing cattle up. We had about 200 or 250, I don't know exact number, and we were putting them into the corral for vaccination for Brucellosis and Tuberculosis. Just as we were about to go into the gate the blast went off, and the cattle whirled and ran to the back of the field to the fence, and the fence back there stopped them. Approximately an eighth of a mile, I would say, and we couldn't stop them. Five or six men trying to stop them, but couldn't stop them until they got to the fence."

Mr. Weisz: Your Honor, I will move to strike the answer to that question on the ground it is irrelevant and immaterial and no foundation has been laid.

Mr. Brett: I would like to ask that the court defer ruling on that until I can read Mrs. Seale's deposition. Mrs. Seale was apparently the one that was able to give it. This, I think, is relevant and material as to what occurred. It is [26] true the witness did not say he could fix the time except he knew about the occasion in October and November.

Mr. Weisz: If it meets with the approval of the court, I could make a composite motion after the depositions of the Seales have been read.

(Deposition of Arthur J. Seale.)

The Court: Very well.

(The reading of the deposition of Mr. Arthur J. Seale was resumed as follows:)

“Q. Please describe what happened when the second shaking occurred.

A. Nothing that I know. Just a jar.

Q. Had you had any extremely cold weather up to the time when the last of these shakings occurred?

A. I don't know. I don't remember when it was. I just remember the first one was in late October or November, but the second I don't remember when it was. Seems like the next spring. I don't know exactly when it was. I don't know when the last one occurred. I think it was in the spring, and I think we had, but I am not sure.

Q. What was the lowest temperature up to that time and during that Fall? A. I don't know.

Q. In the course of your duties as superintendent had you observed the conditions of the interiors of the [27] ranch headquarters buildings which you have previously described before they were shaken in the manner you have just described?

A. Yes, with the exception of the Bartholomae cottage.

Q. Had there been an inspection of these buildings as of April, 1951, and if so, by whom?

A. I heard that there had been one, but I wasn't there. I don't know the insurance company. I don't know.”

Mr. Brett: May I explain parenthetically that

(Deposition of Arthur J. Seale.)

you will find in some of these depositions, that counsel not having full information, asked certain questions which, of course, couldn't be answered. In other words, I wasn't aware at that time of the limitations that these parties had, but I think the only thing we can do is proceed with the depositions.

Mr. Weisz: There will be no objection, your Honor, as to inspection.

(The reading of said deposition of Mr. Arthur J. Seale was resumed as follows:)

“Q. What was the condition of the walls and ceilings in the interior of the headquarters buildings of the ranch before such shakings?

A. Well, I presume the office building would be the one they call the headquarters buildings. They were [28] good. The condition was good.

Q. What was the condition of the walls and ceilings thereof after you had returned from the area where the cattle had stampeded and immediately after the shaking?

A. There were cracks in the plaster and in the ceilings.

Q. Did you have any information from any source that the United States was going to conduct atomic bomb tests at its experimental station in Southern Nevada before the occurrence of the shaking and air movement which you have described?

A. Yes, it was in the Ely paper.

Q. What was your information?

A. That they were going to set off a bomb.

(Deposition of Arthur J. Seale.)

Q. What was its source?

A. Frenchman's Flat. That is where they had the atomic tests out of Las Vegas.

Q. Do you know of anything which occurred on the date when the cattle stampeded and on the date of the second shaking, except the atomic explosions by the United States in Southern Nevada, which, in your opinion, could have caused such damage?"

Mr. Weisz: I will object to that question, your Honor, as calling for a conclusion of the witness and calling for [29] expert testimony without a showing that the witness has the requisite background to answer.

Mr. Brett: I think that is a relevant and proper question on that, concerning the nature of it. I think any witness is capable of forming an opinion as to whether there was any factor, to his knowledge, which would cause a thing. That isn't something that would require specialized knowledge.

The Court: What was the stipulation that was entered into at the time of the taking of this deposition, any, in connection with objections?

Mr. Brett: Yes, your Honor. I will read it.

The Court: With respect to objections?

Mr. Weisz: I think the clerk has the stipulation there. It is along at the bottom of the first page and at the top of the second, I believe, your Honor.

The Court: I think it will be sustained.

(The reading of said deposition was continued as follows:)

(Deposition of Arthur J. Seale.)

“Q. Did you meet Mr. John L. Norwood, a general contractor from Los Angeles County, California, when he visited and inspected the Fish Creek Ranch buildings on September 18, 1951?

A. Yes.

Q. Did you inspect and observe the condition of the ranch headquarters buildings during his inspection [30] thereof? A. Yes.

Q. Was there any difference between the condition of the headquarters buildings as they were on the day they were shaken and damaged and just before they were shaken, and the condition thereof when inspected by Mr. Norwood on September 18, 1951?

A. There was a difference after they were shaken, yes.

Q. Do you recall when the headquarters buildings of the Fish Creek Ranch were inspected by Mr. Norwood and by Mr. Robert W. Millard, a civil engineer from Ely, Nevada, on May 30, 1952?

A. Yes.

Q. Did you inspect and observe the condition of said buildings on that day?

A. Yes, I was with them.

Q. Was there any difference between the condition of those buildings right after they were shaken and their condition on May 30, 1952?

A. No, I don't think so.

Q. During the time while you were superintendent at the Fish Creek Ranch was there maintained,

(Deposition of Arthur J. Seale.)

as a part of its regular operations, equipment which recorded weather conditions? [31]

A. Yes.

Q. What matters did it record?

A. The weather conditions; high temperature and low temperature; precipitation.

Q. In the regular course of business were either the originals or copies of such records forwarded to Bartholomae Corporation at its Fullerton, California, office? A. No. Not to my knowledge.

Q. Were such weather records made and so recorded during all of October, 1951? A. Yes.

Q. Do you have any interest in the outcome of this lawsuit? A. No, I don't."

Mr. Brett: Now, I assume that the cross-examination should be offered.

Mr. Weisz: I think so.

Mr. Brett: And also requested by the Government. Unless there is some objection we will proceed in the same manner.

The Court: Yes, you may proceed.

(Whereupon, the cross-interrogatories and answers thereto of the witness Arthur J. Seale were read as follows:)

"Q. How many improved buildings were there on [32] the ranch during the period of October and November of 1951, other than those previously described?

A. I don't think there were. No, that is all.

Q. Please describe them briefly, if any, as to:

(Deposition of Arthur J. Seale.)

a. Type of construction.

b. Location.

c. And commonly used names.

A. They were well constructed buildings. Had slate roof and siding and all plastered.

Q. Were these buildings, if any, shaken, to your knowledge, in either October or November of 1951?

A. Yes.

Q. If so, what were the dates on which they were shaken? A. I don't know.

Q. Did you inspect these buildings prior to October or November of 1951, and what was the date on which you inspected them?

A. Well, I don't remember the dates, but I went over them. I believe with Mr. Norwood. I think he is the guy. So many of them, but I think that that is the guy.

Q. What was their condition at the time of your inspection? A. Good. [33]

Q. Did you inspect those buildings after or during October or November of 1951, and on what dates?

A. After the damage I looked over all of them; shortly after the damage was done; the explosion.

Q. What was the condition of the buildings at that time?

A. The plaster was cracked in most of them; in the office building and then the bunk house and the Bartholomae cottage, and I don't remember too much about the cook house. I think there was a crack or two in there, in it.

(Deposition of Arthur J. Seale.)

Q. What type of equipment was used at Fish Creek Ranch to record weather conditions?

A. It was a government weather rig. I don't know. Had a man there to read it. I never had anything to do with it. It recorded precipitation and cold, etc.

Q. Who took recordings from the equipment during the years 1950 and 1951?

A. Gents Martiletti.

Q. In what capacity was he or she employed?

A. He was the chore man.

Q. Where was the equipment located on the ranch?

A. Between the office building and the cook house.

Q. With regard to the shakings, did you know the cause of such shakings?" [34]

Mr. Weisz: I will object to it. I can't object to my own question.

"A. Well, I figured it was the atomic bomb."

Mr. Weisz: I will move to strike, your Honor, as being unresponsive to the question.

The Court: It may go out.

Mr. Brett: If the court please, I think that is an answer to the question.

The Court: Under no circumstances would such testimony have any probative value. He says he thinks it was the atomic bomb. He is guessing.

"Q. Can you state where the shaking occurred?

A. I suppose all over Nevada."

Mr. Brett: Are you making objection?

(Deposition of Arthur J. Seale.)

Mr. Weisz: No.

“Q. Do you know whether there was shaking within a distance of 100 feet, 500 feet, 1,000 feet, 1,500 feet, or 2,000 feet, and in which direction from the headquarters of the ranch?

A. Yes, in all those distances and all those directions.”

Mr. Brett: Now, I am offering the deposition of Mrs. Seale, whose name is Chrystal B. [35] Seale:

(The plaintiff's witness Mrs. Chrystal B. Seale's deposition was thereupon read as follows.)

DEPOSITION OF CHRYSTAL B. SEALE

Direct Examination

“Q. What is your name?

A. Chrystal B. Seale.

Q. Where do you now reside?

A. 412 Tenth Avenue North, Nampa, Idaho.

Q. Where did you reside during October and November of 1951?

(Please give the name of the Ranch and describe its location.)

A. At Bartholomae Fish Creek Ranch, Eureka, Nevada, out of Eureka.

Q. By whom were you employed at that time?

(Deposition of Chrystal B. Seale.)

A. Bartholomae Corporation.

Q. In what capacity were you employed during those months?

A. I was employed as office clerk and ranch hostess.

Q. When did you first commence your residence at the 'Fish Creek Ranch'?

A. When Mr. Seale took the superintendentship. I believe we arrived at the ranch about 22nd of July, 1951.

Q. Did you reside there continuously thereafter until your employment by Bartholomae Corporation terminated? [36]

A. I did.

Q. When was that?

A. It was on July 15, 1952.

Q. What occupation was carried on at the 'Fish Creek Ranch' during the period in which you were employed?

A. Cattle raising and general ranching, I presume.

Q. How many improved buildings were there at the headquarters of the ranch during the period of your residence there?

A. I would say there were ten or twelve. I don't know exactly.

Q. Please describe them briefly as to: (a) the location of each with reference to the entrance to the ranch headquarters and the center roadway; and (b) their commonly known names.

A. Entering the gateway on the left would be the power house, pump house and so on, and then

(Deposition of Chrystal B. Seale.)

would be the office building, which consisted of our quarters and guest rooms, and then would be the mess hall, cook's quarters, and then would be the bunk house, and next would be a little tack room, and then would be a saddle horse barn, and then—I will start at the entrance again and go down the righthand side. On the righthand side would be the Bartholomae cottage, and then would be a garage, and next would be the machine shop and [37] machine sheds, or some of the machine sheds, and then I believe would be the granary; and then the roadway turns to the right and on the righthand side would be a chicken house and another machine shed, and on the left would be a work horse barn; and then up off the roadway to the right would be what they called Sara Cottage. I believe that is all the buildings that I can name.

Q. Do you remember two occasions when these buildings were shaken in either October or November of 1951? A. Yes.

Q. What were the dates thereof?

A. One was the latter part of October and the other was the first part of November. I am not exactly certain of those dates. For some reason or other I didn't put them down on our daily work report. However, I think the last date was November 5, 1951, I think was the second shaking.

Q. Please describe what happened and where you were when the first shaking occurred.

A. I was in the office building, and well, it was just a shaking something like an earthquake would

(Deposition of Chrystal B. Seale.)

be. Windows rattled and one of the doors swung back and forth. That was about all I noticed [38] then.

Q. Please describe what happened when the second shaking occurred?

A. That was more intense shaking. In fact, I was sorting the ranch laundry and I had just gotten it started and had just reached for a pencil off the desk when the shake came, and I may possibly have been off balance, but I wasn't in a stooped position, but, however, it was intense enough it threw me into the laundry. I was not hurt but just merely unbalanced me that much. At that time I didn't know what it was. I knew that we were going to have the atomic test. I got immediately up and ran out on the porch and looked around, and to the south and southwest, and to the southwest could see the dust mushrooming up over the mountain.

Q. Had you had any extremely cold weather up to the time when the last of these shakings occurred?

A. Not at that time, no. We had much extreme cold weather before spring came, but speaking as of November 5th, no, we had not had any intense cold weather.

Q. What was the lowest temperature up to that time and during that Fall?

A. I can't say offhand.

Q. In the course of your duties as an employee on the ranch had you observed the conditions of the [39] interiors of the ranch headquarters build-

(Deposition of Chrystal B. Seale.)

ings which you have previously described before they were shaken in the manner you have just described?

A. I had been through all the buildings, yes, and saw their conditions.

Q. Had there been an inspection of these buildings as of April, 1951, and if so, by whom?

A. Well, from the insurance and so on must have been carried on them, and knowing Mr. Bartholomae's thoroughness I would say yes, but I don't know of any. I was not at the ranch until after April 1, 1951."

Mr. Brett: Of course, I realize that is hearsay, your Honor. I am not offering that.

Mr. Weisz: There is no objection to it.

Mr. Brett:

"Q. What was the condition of the walls and celings in the interior of the headquarters buildings of the ranch before such shakings?

A. They were very good.

Q. What was the condition of the walls and ceilings thereof immediately after the shaking?

A. There were little hairline cracks started coming, and one place in the office building very close to where I was there was little sifting of plaster powder sifted down immediately after that. However, [40] no chipping or anything like that. Later on there was a small bulging, not too much. Were a lot of cracks.

Q. Did you have any information from any source that the United States was going to conduct

(Deposition of Chrystal B. Seale.)

atomic bomb tests at its experimental station in Southern Nevada before the occurrence of the shaking and air movement which you have described?

A. Well, naturally, we had all read about it in the newspaper, Nevada State Journal and Ely papers.

Q. What was your information?

A. Newspapers.

Q. What was its source?

A. Newspapers.

Q. Do you know of anything which occurred on the dates when the headquarters buildings were shaken as you have described, except the atomic explosions by the United States in Southern Nevada which, in your opinion, could have caused such damage?"

Mr. Weisz: That is the same question previously objected to as to Mr. Seale and I will make the same objection, that it calls for a conclusion of the witness.

The Court: Objection sustained.

Mr. Brett: Your Honor, may we for the record read the answer so we will have the answer in the record? [41]

The Court: Yes.

Mr. Brett: Understanding, of course, that your Honor has ruled. Would you read the answer?

Mr. Weisz: "A. None that I know of."

I might state we did not read into the record the answer of Mr. Seale which was to the same effect.

Mr. Brett: Thank you.

(Deposition of Chrystal B. Seale.)

“Q. Did you meet Mr. John L. Norwood, a general contractor from Los Angeles County, California, when he visited and inspected the Fish Creek Ranch buildings on September 18, 1951?

A. I did.

Q. Did you inspect and observe the condition of the ranch headquarters buildings during his inspection thereof?

A. Other than the cook house and the office building. No, I wasn't with him on his tour of inspection, other than the cook house and office building. I knew their condition.

Q. Was there any difference between the condition of the headquarters buildings as they were on the day they were shaken and damaged and just before they were shaken, and the condition thereof when inspected by Mr. Norwood on September 18, 1951?

A. I would take this had there been any difference [42] between the buildings between the time Mr. Norwood was there and just before the time of the atomic explosion. I would say that before the shock came the buildings were in the same condition they were in at the time Mr. Norwood inspected them on September 18th. However, there were cracks, etc., after they were shaken.

Q. Do you recall when the headquarters buildings of the Fish Creek Ranch were inspected by Mr. Norwood and by Mr. Robert W. Millard, a civil engineer from Ely, Nevada, on May 30, 1952?

A. Yes.

(Deposition of Chrystal B. Seale.)

Q. Did you inspect and observe the condition of said buildings on that day?

A. Yes, I went through them at first with them, but I didn't inspect when the atomic inspector came up and inspected them again. Mr. Seale was with them, but in the morning I did go in with Mr. Bartholomae and Mr. Millard and Mr. Norwood, because Mr. Seale was not at the ranch, and I went in and showed them the cracks, etc., in the buildings, and showed them generally how the cracking was.

Q. Was there any difference between the condition of those buildings right after they were shaken and their condition on May 30, 1952? [43]

A. None, other than that maybe some of the cracks had widened slightly.

Q. Do you have any interest in the outcome of this lawsuit?

A. Absolutely none whatsoever."

The Court: Read the question on which the Court deferred ruling.

Mr. Weisz: What we did, your Honor, I asked to make a general objection which goes to several questions and if I may again state that objection very fully at this point.

The Court: Very well.

Mr. Weisz: I will object to the questions and answers and move to strike them, that is, of Mr. and Mrs. Seale with respect to the shakings.

With regard to Mr. Seale, it is apparent that he did not know when these shakings occurred. As to

him I think it is sure the matter related by him is both immaterial and irrelevant and that no foundation has been laid. There is no connection with this case of the shakings, if there were shakings in the air.

With regard to Mrs. Seale, the question is not so clear. Mrs. Seale states that there was, as best she recalls, a shaking on November 5, 1951, but does not recall the prior shaking. As to November 5th, she apparently was not certain.

I will call the Court's attention to the fact that there [44] was no time of day set when this happened.

The only connection at all with the atomic tests is the testimony of Mrs. Seale that after the second shaking, the November 5th shaking, she went out on the porch and she saw the dust mushrooming. Of course, the word "mushrooming" has a new significance in our language, but I submit that the term does not denote, without further explanation, that characteristic mushrooming of an atomic detonation. Therefore, there is no foundation to connect the shaking with the atomic explosion.

The Court: The motion is denied.

You are referring now to a matter of the question of admissibility. The question as to how much weight is to be given to it is another question. It is not too remote, and therefore it is admissible.

We will take a five-minute recess.

(Recess.)

Mr. Brett: If the Court please, during the re-

cess I have consulted with the Government counsel in reference to the depositions themselves. Of course, the portions that have been admitted in evidence are now in evidence through the reading of them, but as a convenience to the Court, and if the Court will permit, I will offer the depositions as exhibits for identification. So, if it should develop that you should desire to examine them prior to having the record written up, [45] you will have the questions and answers available to you. So I will offer the depositions of Arthur J. Seale, both direct and cross-examination, as Plaintiff's Exhibit No. 3 for identification, and the deposition of Chrystal Seale as Plaintiff's Exhibit No. 4 for identification, and for that limited purpose, it being understood that the offer is made with the knowledge that the text is in the record to the extent permitted by the Court.

The Court: Very well.

(Said depositions were marked as Plaintiff's Exhibits Nos. 3 and 4, respectively, for identification.)

Mr. Brett: I will ask Mr. Millard to resume the stand.

ROBERT W. MILLARD

a witness called by and on behalf of the plaintiff, having been previously duly sworn, resumed the stand, and further testified as follows:

Direct Examination
(Continued)

Mr. Brett: At this time I will offer in evidence the chart which has been marked Exhibit No. 2, for illustrative purposes, to illustrate the witness' testimony.

Mr. Weisz: No objection, your Honor.

The Court: It will be admitted.

(The document previously marked Plaintiff's Exhibit 2 was received in evidence.)

By Mr. Brett:

Q. Now, Mr. Millard, did you personally [46] examine the various improvements at the headquarters of the Bartholomae Fish Creek Ranch in the spring of 1952?

A. Yes, in the spring of 1952.

Q. And was that in May of 1952?

A. May 30th, I believe was the first date of inspection.

Q. And will you state to the Court who were present at the time you made that inspection?

A. I made the inspection in conjunction with——

Q. Sir?

A. I was thinking, Mr. Brett, the first inspection was in conjunction with Mr. Norwood.

(Testimony of Robert W. Millard.)

Q. That is John L. Norwood?

A. John L. Norwood.

Q. And more recently, and in connection with the preparation for the trial of this case did you again inspect the buildings?

A. I inspected the buildings on more than one occasion after the original inspection.

Q. Now, have you prepared to scale a drawing illustrating the location of and the length of various apertures or cracks in the walls or the ceilings of those buildings?

A. Yes, I have. For clarification, Mr. Brett, I inspected again on June 17, 1952. On that occasion I took my father, who is a registered architect, who holds Nevada State Architect's License Number 9, to the Fish Creek Ranch, [47] and together with him, we inspected the buildings for the second time.

Then, just prior to the first date of this trial, and following last fall's earthquake, I again inspected the buildings, and prior to the trial I went to the ranch and prepared a detailed scaled drawing of several of the ranch rooms which I have here for a court exhibit.

Q. Passing the point for a moment, I will ask you this: Was there any change in the character of the walls and ceilings from the time of your first inspection, May 30, 1952, and the last inspection when you made your chart?

A. There was no intensity in the cracking that I could observe. The cracks, to a certain degree,

(Testimony of Robert W. Millard.)

had accumulated a little dirt, but there was no difference that I could observe in the intensity of the cracks.

Q. And did you also, and in the course of that last inspection in making those charts, accompany a photographer and direct the taking of photographs?

A. On one of the inspections I took a certified photographer with me and he photographed certain cracks at my direction.

Q. And while you were present?

A. While I was present there.

Q. What was the name of the photographer?

A. Irwin Fehr. [48]

Q. And where does he have his office?

A. He has a photographic business in Ely, Nevada.

Q. Do you have the chart that you have referred to, here?

A. They are right there on that table.

(The witness produces charts.)

Q. Is there more than one, Mr. Millard?

A. Yes. There are two.

Mr. Brett: I will ask the clerk to mark this next chart which refers to Building No. 1, the Foreman's cottage as Plaintiff's Exhibit No. 5 for identification.

(Said chart was marked as Plaintiff's Exhibit No. 5 for identification.)

Mr. Brett: May I state to the Court that I be-

(Testimony of Robert W. Millard.)

lieve I have disclosed everything that I am using here with the exception of some temperature charts, which I will later reach, to Government's counsel. If I should be inaccurate on that, and if you will direct my attention to it, I will first show you anything for inspection. I think we covered those matters before and I am not taking any time by way of explanation.

The Court: Very well.

Q. (By Mr. Brett): Now, Mr. Millard, will you state to the Court what the drawing, which you have just placed on the board, and which has been marked by the clerk as Plaintiff's Exhibit No. 5 for identification, discloses? [49]

A. This exhibit shows all of the cracks which I was able to find in two identical bedrooms of the foreman's cottage or Building No. 1. The building is shown on the plan here.

Q. That is Exhibit No. 2 you are now pointing to?

A. That is Exhibit No. 2. There is a bedroom in the northeast corner of the cottage. There is an identical bedroom in the southeast corner of the cottage. And I was attempting to find out if there was a general pattern of the cracks and also if temperature was a factor in the cracking of the plaster; then, the bedroom with the greatest temperature change in it should have the greater number of cracks.

These buildings are laid out nearly north and south. The southeast bedroom then having the great-

(Testimony of Robert W. Millard.)

est temperature range would have the greater number of cracks, if temperature were a factor in the cracking of plaster.

The upper drawing that I have shown here is the ceiling of the northeast bedroom, the north wall, the east wall, the south wall and the west wall laid flat for diagram purposes. If you would cut that and pick this up (indicating) this being drawn $\frac{1}{2}$ inch to a foot, this is the arrangement of the northeast bedroom.

This likewise is the identical arrangement of the southeast bedroom.

Q. Then I take it the center portion would be the [50] ceiling?

A. The center portion of each of the rooms so diagrammed is the ceiling, the circle being the light.

Q. Are those diagrams to scale?

A. Those diagrams are to scale, a half-inch to the foot.

Q. And the diagrams of the crackings are to scale?

A. The diagrams of each crack are to scale.

Q. Now, before the month of October, 1951, and specifically before October 22, 1951, had you been in that building?

A. Pardon me, Mr. Brett. May I clarify that last answer of the cracks being to scale.

There is no way of telling the widths of the cracks on such a diagram. To that extent they are not to scale. Some of the cracks are wider than the

(Testimony of Robert W. Millard.)

other cracks. But insofar as the pattern, they are to scale.

Now, will you read the question?

Mr. Brett: Please read the question.

(Pending question read.)

A. Yes, I had been in this building prior to 1951.

Q. Had you examined the walls and the ceilings of the property?

A. No. I had no occasion to examine the walls and ceilings of the buildings.

Q. Had you observed any cracks in the walls and the [51] ceilings of the property at that time?

A. No. I had observed no cracks in this building, there were none in evidence when I was in the building—glaring evidence. I had no reason to examine the building for cracks.

Mr. Brett: Will you take the stand again for a minute. We will come back to that.

(The witness resumes the witness chair.)

Mr. Brett: Counsel has suggested that we might enter into a stipulation as to foundation so I will ask the witness a question on a date.

Q. When were the photographs taken, Mr. Millard?

A. May I get my photographs? They are dated.

Mr. Brett: All right.

Mr. Weisz: Your Honor, as to the photographs, the defense will stipulate that the pictures were

(Testimony of Robert W. Millard.)

properly taken by a competent photographer, they were taken at the place they represent, as well as the camera can, of that which the picture purports to represent and we will waive all foundational questions. The only thing we want is to have very clearly in the record as to the dates when these pictures were taken as representing the property at that particular date.

The Court: Very well.

The Witness: The pictures were taken October 8, 1953.

The Court: Let us have these pictures marked for [52] identification that you are referring to.

Mr. Brett: Now, I will ask the clerk to mark this.

Mr. Weisz: Might I state, that goes for any photographs offered by the plaintiff.

Mr. Brett: Will you mark this photograph as Exhibit No. 6 for identification?

The Court: You can put it right in evidence, in view of the stipulation, if you want to.

Mr. Brett: Well, I want to have the witness to identify it.

The Court: Is that the one he states was taken on that date?

Mr. Brett: All of these were taken on the same date. I will offer it in evidence as Exhibit No. 6, but I want the witness to do some testifying from it.

The Court: It will be received.

(Testimony of Robert W. Millard.)

(The photograph was received in evidence as Plaintiff's Exhibit No. 6.)

Q. (By Mr. Brett): I show you the photograph which has been offered and received in evidence as Exhibit No. 6 and ask you what it portrays?

May I temporarily stand here and make notes until I get through with the photographs?

The Court: Yes.

Mr. Brett: Thank you. [53]

A. Exhibit No. 6 is a general photograph of the ranch building area looking northerly, nearly due north.

Mr. Brett: Will you pass that to His Honor?

Mr. Clerk, will you mark the next photograph as Exhibit No. 7?

(Said photograph was marked Plaintiff's Exhibit No. 7 for identification.)

Mr. Weisz: We will further extend our stipulation, your Honor, to the legends that appear on the backs of the pictures, which will explain to some extent from whence, from what point the pictures were taken, for what value they may have in clarifying the record.

Mr. Brett: That will be appreciated. And I will so stipulate, and I won't have to take the time of the witness on it because it describes it.

The Court: Very well, and it will be received in evidence.

(Testimony of Robert W. Millard.)

Mr. Brett: I offer this photograph Exhibit No. 7 in evidence.

The Clerk: Exhibit No. 7 in evidence.

(The photograph was received as Plaintiff's Exhibit No. 7 in evidence.)

Mr. Brett: And hand it to the court.

Q. The buildings which are referred to in the notes on the backs of these photographs as the Bartholomae cottage, [54] do they refer to photographs of the building which you have illustrated as Building No. 1 or foreman's cottage on Exhibit 2?

A. Yes, foreman's cottage and Bartholomae's cottage, are one and the same building.

Mr. Brett: I offer this photograph, the exterior of the Bartholomae cottage as Exhibit 8.

The Court: It will be received in evidence.

(The photograph was received as Plaintiff's Exhibit No. 8 in evidence.)

Mr. Brett: While this to some extent is a duplicate, I will offer this as Exhibit No. 9, the exterior of the Bartholomae cottage. That is a closer picture.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 9 in evidence.)

Q. (By Mr. Brett): Now, is it correct, Mr. Millard, that some of the photographs were taken at a distance and then a closer picture was taken with the camera so that you were right up against

(Testimony of Robert W. Millard.)

the subject matter? A. Yes, that is true.

Mr. Brett: I offer next as Exhibit No. 10 a photograph of a portion of a wall.

The Court: It will be received.

Mr. Brett: It is the east wall of the southeast bedroom. [55]

(The photograph was received as Plaintiff's Exhibit No. 10 in evidence.)

Q. (By Mr. Brett): Would you show where that is on this last drawing, Mr. Millard, the east wall of the southeast bedroom?

A. Would you like me to show where the picture was——

Q. No. On the drawing, Plaintiff's Exhibit No. 5 for identification?

A. The east wall of the southeast bedroom is this wall (indicating on drawing).

Q. In other words, on this drawing north is at the top and south is at the bottom?

A. And the right-hand is east and the west is the left-hand.

Mr. Brett: I offer as Exhibit No. 11, a photograph, a closeup of the east wall of the southeast bedroom.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 11 in evidence.)

Q. (By Mr. Brett): Will you state to the court the purpose of having that rule in that photo-

(Testimony of Robert W. Millard.)

graph, Mr. Millard?

A. The rule in the photograph was placed there in order to give an idea of dimension against a white wall.

Q. And that particular outline is also shown in your drawing, Exhibit No. 5?

A. Yes, it is shown on that exhibit. [56]

Mr. Brett: As Plaintiff's Exhibit No. 12, I show you a photograph of the east wall of the northeast bedroom.

The Court: That will be received.

(The photograph was received as Plaintiff's Exhibit No. 12 in evidence.)

Mr. Brett: I next offer a closeup of the east wall of the northeast bedroom, as Exhibit No. 13.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 13 in evidence.)

Mr. Brett: May I consult with counsel for just a moment?

The Court: Yes.

(Discussion between counsel off the record.)

Mr. Weisz: The stipulation covers No. 11, including the one following, which is to be Plaintiff's Exhibit 14.

Mr. Brett: I will offer the photograph of the northeast bedroom, the north wall, together with an indication of the force of the cracks and the dimen-

(Testimony of Robert W. Millard.)

sions thereof with reference to a window, which is on the back of the photograph, as Exhibit 14.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 14 in evidence.)

Mr. Brett: I want to ask the witness a question or two about this, your Honor, if I may. May I have it? [57]

Q. Mr. Millard, on the back of Plaintiff's Exhibit No. 14, there are some illustrations giving courses and also distances. Were those made by you?

A. Yes, these were made at the time the photographs were taken.

Q. And are those courses and distances, that is the courses, indicating the directions of the cracks, and the measurements indicating the distances in each direction? A. Yes, they are.

Q. Were those accurate measurements?

A. Yes. They are measured distances.

Q. Taken by you at the location?

A. That is correct.

Mr. Brett: Will you hand that to the court.

As Exhibit No. 15 I offer in evidence photograph of the northeast bedroom ceiling, together with the drawing on the back of it.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 15 in evidence.)

Q. (By Mr. Brett): Now, I ask you, Mr. Mil-

(Testimony of Robert W. Millard.)

lard, with reference to that, is the drawing on the back to measurement and taken at the time of the photographs?

A. Yes, the distances indicated are measured distances.

Q. And indicate the courses and distances of the [58] cracks in the ceiling?

A. Yes, they do.

Mr. Brett: We do not have a closeup here, I note, here of that ceiling photograph.

I believe that concludes all of the photographs with reference to the foreman's building or Bartholomae cottage which is Building No. 1. At this time, and for illustrative purposes, I offer in evidence the drawing which has been marked as Plaintiff's Exhibit No. 5 for identification.

Mr. Weisz: To which I will object, your Honor, on the ground it does not show the condition of the buildings, other than in 1953, and that of such dates, that is immaterial and irrelevant.

Mr. Brett: Well then, I will ask the witness a question:

Q. Mr. Millard, was there any difference between the condition of the foreman's building or Bartholomae cottage No. 1 between May 30, 1952, and the date on which these photographs were taken, insofar as the cracks in the walls and ceilings were concerned?

A. I could observe no difference.

Mr. Weisz: The objection is repeated, your Honor, and other than that, it brings it down to

(Testimony of Robert W. Millard.)

May of 1952.

The Court: The objection is overruled. It will be received.

(The drawing previously marked Plaintiff's Exhibit No. 5 was received in evidence.) [59]

Q. (By Mr. Brett): Now, do you have our drawing, Mr. Millard, of another structure with reference to the cracks?

A. I prepared a second drawing showing the cracks in identical bedrooms in the bunkhouse, which is also on the table there.

Q. Is this drawing that I now show you the drawing you refer to? A. Yes.

Mr. Brett: I ask the clerk to mark this drawing as Plaintiff's Exhibit No. 16 for identification.

The Clerk: No. 16.

(Said drawing was marked as Plaintiff's No. 16 for identification.)

The Court: Are you through with that other one, Mr. Brett?

Mr. Brett: Yes. Well, we may refer to it later. I want to put another on top of it.

The Court: The clerk better mark that. I think that has been received in evidence. You better mark this now, so you keep track of it, the one up there.

The Clerk: It is No. 5, your Honor, isn't it?

The Court: No. 5.

Q. (By Mr. Brett): Mr. Millard, did you prepare the drawing which is now on the blackboard

(Testimony of Robert W. Millard.)

and has been marked as Plaintiff's Exhibit No. 16 for identification? [60] A. Yes, I did.

Q. Is it prepared to scale?

A. It is to scale.

Q. It was prepared in the same manner in its layout, both as to the dimensions of the buildings and in the apertures such as windows, doors, et cetera, and the plane used and the designation of the courses and distances of any cracks in the walls or ceilings that you had heretofore described you used in connection with Plaintiff's Exhibit No. 5?

A. It is the same. This diagram, however, shows three rooms.

Q. Now insofar as directions are concerned, does the same apply to this drawing, north is at the top, or what are the directions on this drawing?

A. This drawing is laid out in accordance with the rooms in the building.

Q. I want to get the compass directions just at the moment. Which is north, south, east and west?

A. Well, the right-hand side is north. This building faces east.

Q. Will you take a red pencil and put an "N" upon Plaintiff's Exhibit 16 for identification showing the compass direction for north?

(The witness writes a red "N" and draws a lead-line in connection therewith on said exhibit.) [61]

Q. Now, will you briefly explain what the various

(Testimony of Robert W. Millard.)

indications are, what the various lines show on this drawing so that the court can identify them?

A. This is the living room and two bedrooms (indicating on said drawing), the two adjacent front bedrooms of Building No. 5 or the men's bunkhouse where the men who work at the ranch live.

This (indicating on said drawing) again is the ceiling of the living room.

These charted lines (indicating on Exhibit 16) represent wood wainscotings that are put on the rooms. The area above the wainscoting is plastered and the ceiling is plastered. The entire ceiling of the living room is plastered.

This (indicating on said drawing) again is the northeast bedroom. This (indicating) is the bedroom directly across the hall from the northeast bedroom, the southeast bedroom of the bunkhouse.

Mr. Brett: Of course, the word "this" wouldn't mean much in the record, but I note, and it is true, is it not, that the drawing itself contains language which describes each building?

A. I believe you are **right**.

Q. Up here, or to the right (indicating) of each particular building, is that true?

A. Of the particular room. [62]

Q. Now, in the course of preparation for this case, were photographs taken in connection with this property?

A. Yes. There were photographs taken of the

(Testimony of Robert W. Millard.)

living room and photographs were taken of both bedrooms.

Mr. Brett: Will you resume the witness stand?

(The witness returns to the witness chair.)

Q. So that we may save time, will you set out from these photographs that I hand to you, the ones that are applicable to the structure which is illustrated by Plaintiff's Exhibit 16?

A. These four photographs are of Building No. 5 (indicating photographs).

Mr. Brett: Please take the others now.

Under the same stipulation with reference to foundation, I am going to offer the next four photographs. As Plaintiff's Exhibit No. 17, a photograph of the east wall and ceiling of the southeast bedroom.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 17 in evidence.)

Mr. Brett: As Plaintiff's Exhibit No. 18, a photograph of the east wall and ceiling of the northeast bedroom.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 18 in evidence.) [63]

Mr. Brett: As Plaintiff's Exhibit No. 19, the east or front room ceiling looking northwesterly.

(Said photograph was marked as Plaintiff's Exhibit No. 19 for identification.)

(Testimony of Robert W. Millard.)

Q. (By Mr. Brett): I will ask you, Mr. Millard, to identify which of the rooms that refers to, before I offer it, referring to your Exhibit 16 for identification.

A. This picture was taken in the living room (indicating on Exhibit 16).

The Court: What number did you say? What is that number?

Mr. Brett: This is No. 19, that we are now looking at.

The Witness: Looking from the lower left toward the upper right on the diagram—correction—it is northwesterly.

Q. (By Mr. Brett): Of the living room in Building No. 5, the bunkhouse?

A. The bunkhouse.

Mr. Brett: We will offer this.

Q. And it is the ceiling, is that correct?

A. The ceiling and west wall—it shows a portion of the west wall.

Q. And a knife is put there to draw attention to——

A. Yes, I placed the knife there in one of the larger cracks.

The Court: It will be received. [64]

(The photograph was received as Plaintiff's Exhibit No. 19 in evidence.)

Mr. Brett: May I explain, your Honor, that this property is a long ways away from here and I haven't been there for some little time, so that is

(Testimony of Robert W. Millard.)

the reason I sometimes have to have my memory refreshed.

Q. Now, as I understand it, Mr. Millard, all of the cracks that are shown on your drawing of May 30, 1952, were on the walls as shown in Exhibit 16 for identification?

A. As far as I know, that is true. They existed the date we made that drawing, which was not May 30th. February 25th.

Q. That is February 25th of this year?

A. That is right.

Q. Now, were any of those cracks there on May 30th of 1952?

A. We closely examined the buildings on May 30th of 1952. However, on that date no diagramming was done.

Q. Well, what is your opinion?

A. My opinion is that these identical cracks were there on May 30th.

Mr. Weisz: Your Honor, I will move to strike that last answer as being the opinion of the witness on a matter as to which his qualification as a licensed civil engineer does not render him an expert. [65]

Mr. Brett: I haven't offered it on the theory as a civil engineer. I think that is a matter of observation. The man has stated he had lived there.

The Court: If it isn't, then, the objection is good. In other words, the only time an opinion is admissible is as an expert's and, of course, if you don't offer it as an expert opinion, then, the ob-

(Testimony of Robert W. Millard.)

jection is good, and the motion will be granted.

Mr. Brett: Well he is an expert. He is a civil engineer and I will offer it on that basis.

The Court: Well, lay a foundation as to why you believe he can make such an estimate and give such an opinion.

Q. (By Mr. Brett): In the course of your experience as a civil engineer, have you constructed buildings?

A. We are engaged in the design and construction of buildings in Nevada, have been for years.

Q. And as I understand it, you were employed as the engineer for this particular property for a period of years? A. That is true.

Q. In the course of your experience have you had occasion to both observe and to make studies of cracks and other disfigurements in buildings and their causes?

A. We have done a great deal of construction work, including plastering. We designed and constructed the City Hall at Ely. We supervised the construction of the high school, [66] of the courthouse, of the jail, of the county hospital, and we have had a lot of experience with plaster.

Q. Were these disfigurements in this bunkhouse building readily visible to the eye?

A. Yes.

Q. And had you been in the bunkhouse on a number of occasions? A. Yes.

Q. And you made a trip at the request of the

(Testimony of Robert W. Millard.)

plaintiff in this case to inspect the buildings on May 30th of 1952? A. I did.

Q. For the purpose of, among other things, examining those buildings and determining to what extent, if any, they had been damaged?

A. To see the extent and the nature of the damage.

Q. And you had occasion at that time to examine the walls and ceilings of this property?

A. Yes.

Q. Now, do you have an opinion as to whether or not the condition that you have described in your chart made in February of 1955, with respect to the cracks in the walls and ceilings was the same as it was when you made your inspection on May 30, 1952?

The Court: Counsel, you are calling for an opinion. Now, his testimony should be as to the facts. He has testified [67] he was there in May, 1952, and he examined them there in May of 1952. That is not a matter of opinion. You are asking him now, was it the same at this time as it was in May, 1952.

Mr. Brett: I will ask him that question.

The Court: He has testified as to a fact. Either it was or it was not.

Q. (By Mr. Brett): Was the condition, when you observed it and made this chart in February, 1955, insofar as the cracks on these walls and ceilings in the bunkhouse were concerned, the same as you observed it when you made the inspection on May 30, 1952?

(Testimony of Robert W. Millard.)

A. It was the same. I could observe no difference between the inspections in May, May 30th—on June 17th following both of the Nevada earthquakes I inspected the buildings, we took pictures on October 8th—and this date in February, when the charts were made, and there was no observed difference in the cracks at that time—on any of those trips.

Q. As I take it, then, the only difference that you have in mind is that you did not measure the cracks or detail them on any drawing at a prior time?

A. That is true, except you will realize that there was some detailing of them at the time the photographs were taken. They were shown on the photographs in October of 1953. The complete detailing was done in February of 1955, as certified on the drawings. [68]

Q. For the purpose of the trial?

A. For the purpose of the trial.

The Court: We will recess until 2:00 p.m.

(Whereupon, a recess was taken until 2:00 p.m. of the same day, Tuesday, May 10, [69] 1955.)

Tuesday, May 10, 1955—2:00 P.M.

Mr. Brett: Before I proceed with the offer of some photographs of other buildings, your Honor, at this time I would like to offer in evidence, for illustrative purposes, Plaintiff's Exhibit No. 16 for identification.

(Testimony of Robert W. Millard.)

Mr. Weisz: The Government will object as previously, as to Exhibit No. 5, your Honor; that it is too remote in time, showing from testimony only to May of 1952.

The Court: The objection is overruled. It isn't offered for the purpose of proving the facts or the condition they are in there. As a matter of fact, his testimony would indicate in some respects they were not——

The Clerk: Shall I mark it in evidence, your Honor?

The Court: It will be received.

(The diagram was received as Plaintiff's Exhibit 16 in evidence.)

ROBERT W. MILLARD

a witness called by and on behalf of the plaintiff, having been previously duly sworn, resumed the stand, and testified further as follows:

Direct Examination

(Continued)

Mr. Brett: Your Honor, I will go to the lectern as soon as I finish with the photographs. I understand that is with your approval. I hate to run back and forth. [70]

The Court: All right.

Mr. Brett: Pursuant to the stipulation we had this morning with reference to the foundation, I will offer as Exhibit No. 20 in evidence a photo-

(Testimony of Robert W. Millard.)

graph of the northwest bedroom, the west wall and ceiling of Building No. 3, together with a drawing on the back of the picture illustrating the course of the cracks in the ceiling.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 20 in evidence.)

Q. (By Mr. Brett): Now, Mr. Millard, when we were referring to Building No. 3 in these photographs, we are referring to the office building which is depicted as Building No. 3 on Plaintiff's Exhibit No. 2 in evidence? A. That is right.

Q. And in each and every instance, whenever there appears diagrams on the backs of these photographs, those diagrams were made by you and made by you with direct reference to the property and at the property? A. That is right.

Mr. Brett: I next offer in evidence as Plaintiff's Exhibit No. 21 a photograph of the east wall and ceiling in the southwest bedroom of Building No. 3, together with the endorsement on the back thereof.

The Court: It will be received. [71]

(The photograph was received as Plaintiff's Exhibit No. 21 in evidence.)

Mr. Brett: I next offer as Exhibit No. 22 in evidence a photograph of the exterior of Building No. 3.

The Court: It will be received.

(Testimony of Robert W. Millard.)

(The photograph was received as Plaintiff's Exhibit No. 22 in evidence.)

Mr. Brett: I next offer as Exhibit No. 23 in evidence a photograph of the plastered ceiling and a portion of the walls of the office in the Administration Building, which is Building No. 3, together with the memorandum on the back thereof.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 23 in evidence.)

Mr. Brett: I next offer as Exhibit No. 24 in evidence a photograph of a ceiling crack east and west over the office desk in the area which was depicted in Exhibit No. 23, and the description on the back thereof.

The Clerk: Plaintiff's Exhibit 24.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 24 in evidence.)

Q. (By Mr. Brett): Now, was there repair in the ceiling when you first examined the property in Building No. 4, the cook house? [72]

A. Yes, there was.

Mr. Brett: I will offer as Plaintiff's Exhibit No. 25 a photograph of the repaired ceiling in Building No. 4.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 25 in evidence.)

(Testimony of Robert W. Millard.)

Mr. Brett: I will offer in evidence as Plaintiff's Exhibit No. 26 another photograph showing the dining room in which the repaired ceiling was located, by showing a view of the dining room in Building No. 4, with the description on the back.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 26 in evidence.)

Mr. Brett: I offer in evidence as Plaintiff's Exhibit No. 27 an exterior view of the front and the south side of Building No. 4.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 27 in evidence.)

Mr. Brett: I will offer as the last photograph of this character, as Plaintiff's Exhibit No. 28, an exterior view of the front and south side of the bunkhouse or Building No. 5.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 28 in evidence.) [73]

Mr. Brett: May I inquire of counsel for a moment, your Honor?

The Court: Yes.

(Colloquy between counsel off the record.)

Q. (By Mr. Brett): I am going to show you a photograph, Mr. Millard, which bears the heading, "Taken April 5, 1954, by Irwin Fehr," and ask you

(Testimony of Robert W. Millard.)

if you know what that photograph refers to and the general location with reference to the areas involved herein?

Mr. Weisz: The stipulation goes to that, too.

Mr. Brett: Oh, I am sorry. Counsel has informed me that the stipulation would go to this photograph, too, and I didn't so understand him, your Honor. Then I will offer as Plaintiff's Exhibit No. 29 in evidence the photograph and the notation on the back, an aerial photograph looking toward the property herein involved. Then I want to ask the witness a few question about it.

The Court: It will be received.

(The photograph was received as Plaintiff's Exhibit No. 29 in evidence.)

Mr. Brett: I am sorry I took the time, in view of counsel's kindness.

The Court: That is all right.

Q. (By Mr. Brett): Now, Mr. Millard, will you state in what direction in that picture the Bartholomae Fish Creek [74] Ranch is located?

A. This picture is looking approximately due south. The Bartholomae Fish Creek Ranch is shown in the central portion of the picture, at the top of the small mountains, which is the Eureka Range. We wanted to get an aerial photograph which would show the terrain between the Fish Creek Ranch and Frenchman's Flat. This was an attempt to show the area southerly from the Fish Creek Ranch.

Mr. Brett: Now, if you will hand that to the

(Testimony of Robert W. Millard.)

court I will get back to the lectern to continue with my examination.

Q. Now, did you make any investigation for the purpose of determining whether or not there were any physical impediments to the course of any blast from the area in which the Atomic Energy Commission initiated tests and known as Frenchman's Flat northerly and toward the Fish Creek Ranch?

Mr. Weisz: I object to that question as assuming at least one fact not in evidence, namely, where the blast took place. Presumably a blast can take place on the ground or in the air. Physical impediment, I presume, would be some sort of physical impediments in a straight line which might well be present as to a ground shot, as they call it, but not as to an aerial shot.

The Court: Objection sustained.

Q. (By Mr. Brett): Did you make an examination, make an investigation to determine the character of the terrain [75] and elevations on a direct line northerly from the Nevada Proving Grounds to the area in which the Bartholomae Fish Creek Ranch is located?

A. Yes, we did. We acquired the only known contour maps which give completed coverage of the area between Frenchman or Yucca Flat and the Bartholomae Ranch, which are the published Aeronautical Charts, and we——

Q. Now, wait just a minute.

You are using the colloquial "we." I want to

(Testimony of Robert W. Millard.)

know, now, are you referring to what you did?

A. I am referring to what I did, yes; referring to the firm as "we," the F. W. Millard & Son.

Q. You are referring to your activities on behalf of the firm, is that right?

A. I am referring to what I did, yes, sir.

Mr. Brett: I will show this to counsel. (Referring to document.)

Mr. Weisz: Your Honor, we will stipulate that the chart, that counsel is bringing forward, is a chart that was used in the ordinary course for aeronautical purposes; that the information contained thereon is correct within the limits of human experience, and that no further foundation may be laid.

Mr. Brett: It is the official instrument issued by the U. S. Coast and Geodetic Survey, so I think it would be admissible as a matter of judicial notice. [76]

The Court: Very Well.

Mr. Brett: I, of course, accept the stipulation.

The Court: You are offering it in evidence?

Mr. Brett: Yes.

The Court: All right, It will be received.

The Clerk: Plaintiff's Exhibit 30.

(Said chart was received as Plaintiff's Exhibit No. 30 in evidence.)

Q. (By Mr. Brett): Now, Mr. Millard, with the use of the information which you obtained on the document which has just been received in evi-

(Testimony of Robert W. Millard.)

dence as Exhibit No. 30, did you plot the elevations between the two points that I mentioned?

A. Yes. I prepared a graph which shows the difference in vertical elevations plotted against the horizontal distance between Frenchman's Flat and Fish Creek Ranch.

Q. Of course, the Nevada Proving Ground is a substantially large area, isn't it?

A. It is a large area.

Q. Would it make any difference in your graph that it is a large area and whatever point in it was the starting test point?

A. Yes, it makes considerable difference. We used the point as shown in the published pamphlet by the A.E.C., which was put out this year, which shows the point at which the certain experiments were conducted at Frenchman's Flat. [77]

Q. That is what you used, then, as your starting point?

A. Yes. It is a little, small booklet. I believe that is it. There are two maps in there. I believe there is one on the back page.

Mr. Brett: Well, I am not going to offer this at the moment. I am going to offer it later. Rather, I am going to identify it so it can be used. Excuse me, counsel. I will find the page. You will want to see that.

(Mr. Brett hands said booklet to Mr. Weisz.)

Mr. Brett: At this time, your Honor, I will ask the clerk to mark this pamphlet which is an official

(Testimony of Robert W. Millard.)

publication of the Atomic Energy Commission, dated January, 1955, and has a yellow cover, for identification as Exhibit No. 31.

The Court: It will be marked for identification.

The Clerk: Exhibit No. 31 for identification.

(Said pamphlet was marked as Plaintiff's Exhibit No. 31 for identification.)

Q. (By Mr. Brett): Now, I will show you Exhibit 31 for identification and will ask you if that document is the document to which you have just previously referred?

A. Yes. That is the document which we used.

Q. Now, on what page of that document is there anything to which you have referred as your starting point within the Proving Ground? [78]

A. On the second page of the document, the page marked "IV," 4, there is map which shows the control point south of Yucca Flat and north of Frenchman's Flat.

On page 37——

Mr. Brett: Pardon me. Just a minute. I want to make a note of that.

Now, you first referred to page 2, and what else was it you said there? It is marked "IV."

A. It is marked "IV," 4, in Roman numerals.

Q. All right.

A. The control point is shown as a square black dot south of Yucca Flat and north of Frenchman's Flat.

Q. All right now, what about page 37?

(Testimony of Robert W. Millard.)

A. On that same map the Las Vegas Bombing and Gunnery Range is outlined as it is on the Aeronautical Chart, which allows you to more or less pinpoint the control point.

Q. Now then, by the "Aeronautical Chart," you are referring to Plaintiff's Exhibit 30 in evidence, the large map?

A. Yes, the large Aeronautical Chart.

Q. All right.

A. Then, on page 37 of this same publication is a vicinity map which shows the Nevada Test Site as such.

Mr. Brett: All right, just lay that down there for the present. I will ask the clerk to mark this drawing as [79] Plaintiff's Exhibit No. 32 for identification.

(Said document was marked as Plaintiff's Exhibit No. 32 for identification.)

Mr. Brett: Will you help me put this up, please, Mr. Millard?

Now, if you will step to one side and use this pointer, Mr. Millard, please. Will you please state to the court just what you have placed on that diagram and what it shows?

A. From the control point as shown in the yellow booklet——

Q. Exhibit 31 for identification.

A. ——to the Fish Creek Ranch buildings, I scribed the line on the Aeronautical charts. It is a pencil line shown on that exhibit——

(Testimony of Robert W. Millard.)

Mr. Brett: It is Exhibit 30 in evidence.

The Witness: —Exhibit 30, and along that pencil line are shown contours, those charts being used by aviators for flying.

This line here (indicating) is a straight line graph taken from the control point to the Fish Creek buildings I examined.

Q. Will you please indicate that with a red pencil and an arrow, and with the letter "A" the line that is the straight line on the graph?

A. (The witness writes a red "A" and draws an arrow [80] lead-line in connection therewith on Exhibit No. 32.)

Q. Now, proceed and identify whatever there is on the drawing so the court may understand it.

A. On the horizontal line I have indicated miles, which are 20, 30, 40, and so forth, right across the drawing, "O" being the approximate control point, and running up to between 160 and 170 miles at the Bartholomae Ranch.

The top profile, an order to show some variation in the vertical range I have exaggerated at 3 to 1. In other words, this vertical increment is three times the horizontal increment. If the horizontal and the vertical increments were the same, this (indicating) would be the graph you would get. This (indicating) is a true graph, a straight-line graph.

Q. By "this" you are referring to the lower of the two lines that run horizontally across the diagram?

A. Right.

(Testimony of Robert W. Millard.)

Q. And the exaggerated scale is the upper of the two, is that correct? A. That is true.

Q. Proceed.

A. I extended the lines both north and south, north of the Fish Creek Ranch into the Eureka Range and south of the control point into the Charleston Range, in order to show some vertical displacement of mountain ranges on the [81] graph.

Q. Now, after making that study and that graph, were you able to draw a conclusion as to what physical impairment or inpediment there was as between the two points?

A. We were attempting to determine—I was attempting to determine whether or not there was any mountain range or mountain peak which would act as a deflector or barrier to anything which originated in the Yucca-Frenchman's Flat area, and I found nothing.

Q. That is in the direction north?

A. From the Yucca Flat area north to Fish Creek.

Mr. Brett: Resume the witness stand.

At this time I will offer the graph in evidence as illustrative of the witness' testimony.

Mr. Weisz: I will object thereto, your Honor, on the ground that the graph as merely illustrative of the witness' testimony is irrelevant and immaterial.

The witness has testified, he has fixed the point for us on a map as exhibit for identification. I think the court can see from that map that we have no

(Testimony of Robert W. Millard.)

point at all as a point of beginning. I shall take that on cross-examination and perhaps clarify it.

The Witness has also stated that it would make a considerable difference were the point selected not the proper one. Under those circumstances, it may be illustrative of the witness' testimony, but I still contend that it is both [82] irrelevant and immaterial.

The Court: Well, I don't see the materiality of it.

Mr. Brett: The materiality of it is this, your Honor: That we are endeavoring in every way we can to show the reasons why this court should, and I believe will conclude that injury to these properties arose out of these atomic explosions.

Now, if the Government is in a position to establish that they didn't take place at the control point, that is within their power and not ours. You will see, when we get to the dispositions, that many things that we wanted were of such a character and restricted that we couldn't get them.

Now we have an official publication which tells the people, "Here is where we are conducting the tests." That is what he had and that is what he took as the starting point.

Now, if they did not conduct the tests there, that is for them to show. That goes to the weight and not to the materiality. We have the stipulation that they conducted these various tests there at that place at various times. We have the effects of something. We are trying to establish that they were

(Testimony of Robert W. Millard.)

the result of those tests. One of the things that we are attempting to show to the court is that there wasn't anything to deflect it so that it would not reach that area.

The Court: Counsel, the most that possibly could be [83] said for the exhibit is that it would be a drawing of the testimony of the witness.

Mr. Brett: That is true.

The Court: So that alone, of course, would not make it admissible. In addition to that, of course, he has testified. I assumed that that perhaps was preliminary and that there was other evidence. Frankly, from the present state of the evidence, even considering his testimony that there was nothing between what he has described as the central point and the ranch, there isn't anything to show that that testimony is material. I don't know that it would make any difference if there was a mountain between.

Mr. Brett: It may be true, but I can't prove my case all in one part.

The Court: When and at such time it becomes material, if it ever becomes material, then, of course, it would be admissible, but it certainly isn't admissible now.

Q. (By Mr. Brett): Now, Mr. Millard, did you make a study in order to arrive at certain conclusions with reference to the causation of the cracks which occurred in the buildings which are depicted on plaintiff's Exhibit No. 2 and are the improved

(Testimony of Robert W. Millard.)

buildings on the Bartholomae Fish Creek Ranch headquarters? A. Yes, we did.

Q. Now, I understand that wherever you use the word [84] "we," unless you state to the contrary, you are referring to yourself.

A. That is true.

Q. Will you state what matters you considered in endeavoring to arrive at a conclusion and arriving at a conclusion as to the cause of these cracks?

A. We made several studies. The first was a structural study of the construction of the buildings. That is the reason that in June I took my father up there and we went carefully over the buildings as they were constructed. And we had available to us the blueprints used in the construction of the buildings.

Q. By that do you mean the plans and specifications and blueprints?

A. The plans and specifications as drawn up when the buildings were constructed in 1941. I had secured them from the Fullerton office of the Bartholomae Corporation. Then we made this structural study of the buildings.

We were very anxious to find out if there had been a settlement, a foundation settlement in the buildings. Such a settlement would cause the irregular jagged cracks in the plaster which occurred in the buildings. So, we very carefully first examined all of the foundation structures under the buildings.

We found that the foundations were continuous

(Testimony of Robert W. Millard.)

8-inch [85] concrete walls under all buildings with the exception of the porches.

We used a flashlight to try to find cracks in the concrete foundations. We did find some curing cracks, some small, irregular hairline cracks in the concrete.

There was, however, no settlement of the footings or heavy cracks of the foundations which could have caused the severe cracking of the plaster.

The second thing structurally that we investigated was the type of construction in the buildings. The buildings are very well constructed. The floor joists are 2 by 8's.

The walls are constructed primarily of 2 by 4 studding.

The rafters are 2 by 6's which is especially heavy for that type of building. We have buildings in Ely where 2 by 4 rafters are used. The floor joists, being 2 by 8's, are especially good. A 2 by 6 is normally used in a building of that type in the area with which I am familiar.

We checked through the insulation in the building, the sheeting in the building, the felt used in the construction outside of the sheeting and on top of the subflooring and found that the buildings were well constructed.

Structurally, therefore, the cracks could not have occurred because of deficiency in architectural, structural construction of the buildings.

Q. What other factor did you consider in an endeavor [86] to determine the cause of the cracks?

(Testimony of Robert W. Millard.)

A. The possibility that the cracks were curing cracks. Plaster curing cracks was ruled out, because curing cracks are not of that type. They are more diagonal cracks and, of course, would have appeared years before, the buildings have been constructed in 1941.

So we immediately ruled out the possibility of curing cracks in plaster.

We investigated the possibility of temperature changes causing cracks.

Q. What information did you obtain for that purpose?

A. From the United States Department of Commerce I secured the monthly publications which give the temperature and precipitation ranges at both Fish Creek and Ely. And in order to show graphically the maximum and minimum temperatures that occurred prior to the time of the blast, I have prepared a graph showing those temperatures.

Q. Are both the reports from the Station at Ely and the Station at Fish Creek reported by the Government?

A. Yes, they are reported monthly by the Government.

Q. And both from the Ely area report?

A. What?

Q. From the Ely area report the Government compiles, that is, they report both in the same report?

A. Yes. It is a Nevada publication and both

(Testimony of Robert W. Millard.)

stations' [87] reports are published in that monthly publication.

Mr. Brett: I will ask the clerk to mark this chart as Plaintiff's Exhibit 33.

(Said chart was marked as Plaintiff's Exhibit No. 33 for identification.)

Mr. Brett: I have some thumbtacks here.

(Said graphic chart was placed on the blackboard.)

Q. Now, Mr. Millard, first, is the drawing which has just been placed on the board and which has been marked by the clerk as Plaintiff's Exhibit No. 33 for identification, the graph to which you have just referred?

A. Yes, it is the graph I prepared.

Q. Now, will you state to the court what this graph shows?

Mr. Weisz: Your Honor, I will object to the question on the ground that it is basically hearsay, in that this purports to be a graphic representation of temperatures taken from a Nevada publication, presumably from something from the Department of Commerce of the United States, which presumes information from some other information of an unknown source.

The Court: Overruled. You may describe it.

Mr. Brett: Describe it.

A. I have plotted the maximum temperatures for each month as put out in that Department of Commerce publication; for Ely, using a heavy solid

(Testimony of Robert W. Millard.)

line, and for Fish Creek using [88] a dashed line, and likewise the minimum temperatures each month upon the lower part of the graph, using a solid line for Ely and a dashed line for Fish Creek, plotted against months starting with January, 1941, through their last publication, which was January, 1955.

Q. Is that indicated by months in each year?

A. The years and months are indicated along the lower extremity of the graph.

Q. And in what manner are the temperatures by degrees indicated?

A. They are indicated by markings along the left-hand vertical border of the graph, one inch equaling 10 degrees in temperature.

Q. Now, as a result of your study of the temperature charts and of the graph which you prepared, did you form any conclusions as to whether or not these cracks could have been caused by temperature changes? You can answer that yes or no.

A. Yes.

Q. And what is your opinion?

A. My opinion is that there are far greater ranges of temperature shown by the graph than existed during the winter of 1951-1952, indicating that had the cracks been directly related to temperature, they should have occurred prior to the winter of 1951-52. [89]

Mr. Brett: You may resume the stand.

At this time I will offer in evidence as illustrative of the witness' testimony, Plaintiff's Exhibit 33.

The Court: No objection?

(Testimony of Robert W. Millard.)

Mr. Weisz: I do not desire to tax the court's patience by renewing the previous objection.

The Court: You didn't make a previous objection. The objection that you made was entirely different than an objection to the introduction of the document. You can't object to his describing the document. How is the court going to find out what it is? So your objection was to testimony describing the document, which was not good testimony.

Mr. Weisz: Your Honor, I am objecting to the document, as being a graphic form of hearsay and also being irrelevant and immaterial to the issues in the case.

The Court: Well, the objection is good. If you had present in court and had in evidence the documents from which he prepared this, then it might be admissible for the single purpose of the convenience of the court.

In other words, if it was a resume of matters in evidence, then, it could be presented and would be admissible for that single purpose, but when you don't even have the matters which he has charted in documents, then it is not admissible for any purpose.

Mr. Brett: Well, I am not going to argue with the court. [90] I had assumed the witness would bring them with him, but he tells me he did not. But personally, I think where one has examined a public record of which I think the court can take judicial notice, I think those records we can put in at a later time on judicial notice. I didn't expect

(Testimony of Robert W. Millard.)

the Government would make an objection to a compilation of those reports. I will ask that we file those documents, which I believe we are entitled to, without offering them in evidence. The court takes judicial notice of weather records.

The Court: You don't get the point at all, Mr. Brett. It isn't that. It is something that makes this document admissible in and of itself. Ordinarily this would not be admissible at all——

Mr. Brett: I realize that.

The Court: ——or it is not admissible at all. The only thing is that oftentimes where evidence is of a character that it would take great study, to go through, and we will say, as an illustration, those documents, if he had taken this information from a number of documents and this would simplify it, it might be admitted for that single purpose——quite similar to what we have very often in income tax cases here.

Mr. Brett: Your Honor, I don't want to take your time. I understand that.

The Court (Continuing): Where the accountants prepare [91] a chart. Actually, the chart itself is not admissible unless it is a chart of matters that are in evidence. It is the fact that they are in evidence. So the accountants being experts have prepared that so that the court is not required to go through all those charts singling that out. It is simplified when he has it prepared in summary form.

Mr. Brett: I am sure we can produce them.

(Testimony of Robert W. Millard.)

They will be a great number of pamphlets and I would like to file them in the light of the objection. I don't think there would be any other purpose, because, as you say, this is merely to summarize for convenience a whole set of reports. The reports would cover each month.

The Court: The value of them, if you had them here, would be questionable, so far as that is concerned, assuming that you even had them, but we don't reach that at this point.

Mr. Brett: I want to make it clear to your Honor with regard to understanding, and I do understand you have ruled, and I don't want to argue, but you will appreciate that I can only offer what I have, regardless of what shape it is in. You will appreciate that, having been a lawyer and a judge.

Q. Now, Mr. Millard, as a result of the study you have made of the property itself, the character of the cracks, the reports that were made giving temperatures at Ely and at [92] Fish Creek, over a period of years, from 1941 through 1955, did you draw a conclusion as to whether or not these particular cracks could have been caused by temperature changes? A. Yes, yes, I did.

Q. What is that opinion?

A. These cracks could not have been caused by temperature changes.

Q. Mr. Millard, were there any earthquakes in the area of the Fish Creek Ranch and of Ely during the months of October and November, 1951?

Mr. Weisz: I object to that question, your Honor. If counsel will add "to your knowledge" to that—

(Testimony of Robert W. Millard.)

Q. (By Mr. Brett, continuing): Well, to your knowledge?

The Court: Well, we certainly assume that he wouldn't testify unless he knew.

A. To my knowledge there were no earthquakes during that period.

The Court: Of course, whenever you start using that term, "to my knowledge," that is when you really start getting into trouble. I don't know whether you mean because of your knowledge there were no earthquakes, or that there were no earthquakes that you know about.

A. There were no earthquakes, your Honor, that I knew about during that time.

The Court: All right. [93]

Mr. Brett: I think, your Honor, and I state this sincerely, that arose by virtue of the objection made, that it wasn't in my question, that I did not ask "to your knowledge"; I am not sure.

The Court: Now, the question would be, if he knows whether there were any earthquakes there.

Mr. Brett: That is right.

Q. Mr. Millard, will you state to the court the location of the nearest railroad with respect to the headquarters of the Fish Creek Ranch?

A. The nearest railroad is the Nevada Northern Railroad at Ely, which is approximately 80 miles easterly of the ranch.

Q. At the time, and by the time I refer to months of October and November of 1951, was the area in which was and is located the headquarters

(Testimony of Robert W. Millard.)

of the Fish Creek Ranch within any regular flight line by airplanes?

A. Ely and Eureka are not served by regular airline service. They are initiating this month airline service into Ely, which is the first time Ely has enjoyed such service.

Q. Well, is your answer yes or no to the question?

A. There were no regular airline flights in 1951 and 1952, in that area.

Mr. Brett: That is all with this witness, your Honor.

The Court: We will take our afternoon recess. We will [94] take a five-minute recess.

(Recess.)

Cross-Examination

By Mr. Weisz:

Q. Now, Mr. Millard, when you examined the cracks in the bulidings on May 30, 1952, is it not true that the cracks that you observed at that time were mostly straight-line cracks, that is, they didn't curve out but were in a straight line?

A. They were square-cornered cracks, most of them, yes.

On May 30th I appeared at the Fish Creek Ranch to be with the Government men at that time. I think it was the date that they set, that they wanted to meet at the ranch, and we walked from the cottage over to the bunkhouse and in the front room of the bunkhouse there was one circular crack. Other

(Testimony of Robert W. Millard.)

than that, they were all square cracks, square-cornered cracks.

Q. In other words, the cracks were right-angled? A. Right-angled, yes.

Q. And can you tell us, from your inspection and the structural study that you made where those cracks were in relation to that which was behind the plaster?

A. They were at the joints of the rock wool, rock-lath backing on the studding, as near as we could determine. We [95] did not, however, tear off any plaster, but the general appearance of the cracks indicated that they were along the abutting areas of the rock lath that was on the studding.

Q. Now, your examination of the foundations of these buildings, can you tell us when that took place?

A. That took place on June 17th, following the inspection on May 30th, that next month.

Q. And in inspecting the foundations, you found some curing cracks?

A. Yes; there were some hairline cracks—very, very few. The concrete is very high class. It is a good grade foundation concrete.

Q. And could you describe for the aid of the court what a curing crack is?

A. A curing crack is a light hairline crack that appears—when concrete cures, it shrinks and creates sometimes a hairline crack, which is not a jagged crack but more of a circular crack.

(Testimony of Robert W. Millard.)

Q. Well, is a curing crack, Mr. Millard, necessarily a hairline crack?

A. Most curing cracks are very small. They are not deep-seated, in other words.

Q. Now, the foundations are concrete?

A. The foundations are concrete. [96]

Q. And the walls that you also examined on the various dates were plastered, is that not correct?

A. The buildings are wood frame, plastered inside.

Q. Does the plaster have the same quality in curing, of producing cracks? A. As concrete?

Q. Yes. I mean, is it a similar process?

A. There are certain ingredients in plaster, of course, which are not in concrete, and vice versa; but curing cracks in plaster are similar, I would say, to curing cracks in concrete.

Q. Now, Mr. Millard, is it not true that curing cracks in time, as a general rule, widen?

A. Mr. Weisz, I would say no, that is not true; that curing cracks in building construction occur during the time the material is setting up.

Curing cracks in plaster or concrete occur within two to three to four weeks after construction.

A curing crack in plaster occurs from the corner of a window or a door and runs at 45 degrees from it. That is my interpretation of a curing crack.

Q. Does plaster have a coefficient of expansion, that is, does it contract and expand with a change of temperature?

(Testimony of Robert W. Millard.)

A. No. Plaster, as such, has no ingredient which has a tendency to contract or expand.

Q. Does a plastered wall such as used by the Bartholomae [97] Fish Creek Ranch buildings expand or contract with changes in temperatures?

A. The wood frame back of the plaster expands and contracts with change in temperature.

Q. But the plaster itself does not?

A. Plaster itself has no ingredient to expand or contract as such.

Q. Now, the rock lath which you mentioned which is behind the plaster, is that not also plaster?

A. Yes, it has a base of plaster of Paris. It is called button board or rock lath.

Q. Well, is the plaster of Paris or rock lath different from the plaster, that is, the finishing plaster that is placed over it?

A. No. There is plaster of Paris in the finished coat of a plaster job, but basically button board is plaster of Paris.

Q. As a civil engineer, sir, do you not have occasion to use various handbooks and in particular the handbook of the American Institute of Steel Construction? A. That is right.

Q. And if I state to you that the American Handbook of Steel Construction at page 348 had a table headed, "Expansion of Bodies by Heat," and showed you on the table that a material described as plaster has a coefficient of expansion, [98] what would you say?

A. Well, that is true. All materials do.

(Testimony of Robert W. Millard.)

We are talking in a practical sense. The thing that expands in a building is the wood framing, not the "plaster." Theoretically, it certainly has a base for expansion, but not from a practical standpoint.

Q. Oh, I am sorry. I misunderstood that. Now, is plaster subject to what we may call a fatigue factor, sir? A. Yes.

Q. And could the expansion and contraction produced by temperature change either directly, through the expansion and contraction of the plaster or the stresses and strains produced by the expansion and contraction of the wood framing produce fatigue in plaster?

A. There are reports of what they call thermal shock which I think you are referring to, due to expansion and contraction of wood framing.

Q. Well, can you tell us, sir, whether in the Fish Creek area of Nevada they had wide ranges of temperature within a 24-hour period as compared, let us say, with Southern California?

Mr. Brett: I object to that as irrelevant and also as immaterial, in that it is taking in an area which seems to me is too large as to have any materiality in this case, what might take place throughout the State of Nevada as [99] compared to what might take place in Southern California.

The Court: What is the purpose of this, counsel?

Mr. Weisz: Well, your Honor, we have just gone over the possibility of either a fatigue factor or what the witness has described as thermal shock. And that is proper, I will point out, for cross-

(Testimony of Robert W. Millard.)

examination, where the witness has given an opinion.

I am seeking to find out whether there may be other factors involved which might be considered, which would have a tendency to produce cracks in plaster.

The Court: All right. The objection is overruled.

The Witness: Your Honor, may I have the question, please?

(Pending question read.)

A. The temperature range, with the slight amount of knowledge, of course, that I have of Southern California, is greater than Los Angeles, let us say.

Mr. Weisz: Thank you. I have no further questions.

Mr. Brett: I have no further questions.

The Court: Mr. Millard, when was the first time you ever examined or ever saw the inside of the structures there at the Bartholomae Ranch?

The Witness: In June, 1946, your Honor.

The Court: And when was the first time subsequent to October, 1951? In other words, the first time after October, [100] 1951, at the time that the damage is alleged to have occurred?

A. It was in May, on May 30th of 1952.

The Court: And how many times have you observed it since then? Roughly? Several times?

The Witness: I would say approximately six.

(Testimony of Robert W. Millard.)

The Court: Some in 1953?

The Witness: Yes.

The Court: Some in 1954?

The Witness: Yes.

The Court: And in 1955?

The Witness: Yes, sir.

In 1954, for your information, we had two earthquakes in the Fallon area of Nevada, one in July and one in December. Immediately following both of those earthquakes I went to the ranch with a set of photographs which have been admitted as evidence and compared directly on the walls the photographs with the existing cracks, to determine whether the earthquakes had any effect upon the widening or expansion of the cracking.

The Court: What did you learn?

The Witness: I found that I couldn't observe any difference before and after the earthquakes, the photographs, of course, having been taken before the earthquakes.

The Court: Have you ever observed any differences as to the time you examined the cracks in the spring of 1952, [101] have you noticed any difference in the extent of the cracks, then, and the last time you saw them in 1955?

A. I have been unable to find any difference.

In June, on June 17th, when my father and I went out there, we made many sketches in our notebook and from that time on, on my various trips, I have been unable to find any difference in the extent or the intensity of the cracks.

(Testimony of Robert W. Millard.)

The Court: Then, you would say that if that damage was caused by the detonation of atomic bombs in 1951, the atomic bombs that have been detonated since then have not in any way caused any damage?

The Witness: No, sir. I haven't been to the ranch during the current series, but prior to that there was no damage, no additional damage from the atomic bombs.

The Court: That is all.

Mr. Brett: That is all.

(Witness excused.)

Mr. Brett: I will call Mr. John L. Norwood as the plaintiff's next witness.

JOHN L. NORWOOD

called as a witness by and on behalf of the plaintiff, having been first duly sworn, testified as follows:

The Clerk: Your full name, please?

The Witness: John L. Norwood.

Mr. Brett: Before proceeding with this [102] witness' testimony, your Honor, it is my understanding that Government counsel and plaintiff's counsel can enter into a stipulation. You have indicated what you would stipulate to. I would appreciate it if you would state it.

Mr. Weisz: Yes.

Your Honor, counsel agree to stipulate that as of the series in the fall of 1951, the atomic detonation series, the newspapers and other communications media carried news of that fact, and that the

(Testimony of John L. Norwood.)

dates of the detonations were known beforehand as a matter of general knowledge, to almost all persons in the area of Nevada with which we are concerned here, this brief area; that it was a matter of common knowledge of all persons within that area that the detonations were to take place on the dates that they did take place, during the fall series of 1951.

Mr. Brett: We accept that stipulation.

The Court: Very well.

Direct Examination

By Mr. Brett:

Q. Mr. Norwood, where do you reside?

A. At 924 South Orange Grove, Pasadena.

Q. What is your occupation?

A. Building contractor.

Q. Do you have a firm?

A. I am in partnership with John W. DeLonge.
Our firm [103] name is Norwood and DeLonge.

Q. Where is your office?

A. 1441 San Marino Avenue, San Marino.

Q. How long have you been engaged in the business of building contracting?

A. I have been a licensed contractor twelve years. I have been in the building business for twenty-two years.

Q. And when you state that you have been a licensed contractor, you mean licensed by what?

A. The State of California. Prior to that I was working for others. Prior to that period I was in

(Testimony of John L. Norwood.)

the building work, but working for other contractors.

Q. What types of structures have you built?

A. Well, we do residential, commercial; mostly residential, I would say, probably 75 per cent of it is residential, small and large, apartment houses and repairs, remodeling.

Q. Now, are you familiar with the property in the State of Nevada which is known as the Bartholomae Fish Creek Ranch? A. I am.

Q. How long have you been familiar with it?

A. My first trip to this ranch was on September 8, 1951.

Q. September 8th? [104] A. Yes, sir.

Q. And how did you happen to go there at that time?

A. I was asked by Mr. Bartholomae to go up there and familiarize myself with the construction and the work; they were anticipating some construction up there and he wanted me to see the layout and see what had to be done, and get the layout, general layout of the ranch.

Q. Now, in the course of carrying on that duty, did you go to the headquarters? A. Yes, I did.

Q. Did you have with you plans and specifications of the buildings?

A. No, I did not, not the first trip.

Q. And did you make any inspection of the buildings? A. Yes, I did.

Q. To what extent did you inspect the buildings?

A. Well, I went through each building in the

(Testimony of John L. Norwood.)

main Fish Creek Ranch. I was by myself most of the time. I crawled under the buildings, to see what the foundations were; I crawled into one of the attics to see what the construction was. I went through all of the rooms and went through the barns, the chicken houses, everything.

Q. Did you examine the walls and ceilings of each of these buildings?

A. Yes, I did. [105]

Q. In detail? A. Yes.

Q. And subsequent to that trip there, did you also have made accessible to you the plans and specifications of the buildings? A. Yes, I did.

Q. And you have studied them? A. Yes.

Q. Will you describe to the court the buildings which are depicted on Plaintiff's Exhibit No. 2, as Buildings Nos. 1 through 5, inclusive, stating the nature and character of the construction as you found it as a result of your inspection?

And, Mr. Norwood, will you please, in order to save the time of the court, so that we can go along, while you are describing it, compare it with other construction which is generally in use, both in the Nevada area and here, according to your knowledge?

A. I have been through, of course, all of the buildings that are on here (indicating on Exhibit 2); this foreman's cottage, No. 1, and the cook-house and the bunkhouse are basically all of the same type of construction. The interior is practically all plaster, inside of them.

(Testimony of John L. Norwood.)

The other buildings generally have the same framing, the same type of lumber and so forth, but there is no plaster [106] in the other buildings.

The exterior is the same on practically all of them. Basically, these four buildings here (indicating on said exhibit) have a concrete foundation that goes down into the earth $2\frac{1}{2}$ to 3 feet, with an 8-inch wall. Normally that is 6 inches in Nevada as well as in California. So the foundations are about 25 per cent heavier than you will find in practically any other buildings in the Nevada area, under one-story buildings.

It has no interior piers underneath the buildings. Instead of piers they have what they call a continuous foundation footing. It is almost the same foundation that is used on the outside of the building. It is considered much better construction and there is less chance of settlement.

The floor joists are 2 by 8's—normally, they are 2 by 6's—which gives you a 25 per cent heavier floor, stronger floor.

The floor joists are covered. These floor joists were covered with a 1 by 8 shiplap; on top of that was a 15-pound felt building paper and on top of that was a 15/16 maple flooring.

The walls are constructed of 2 by 4's, 16 inches on center, which is a normal construction. On the outside of that, they had 1 by 8 solid sheathing, which is a little better than usual. Above that was a 15-pound felt and [107] asbestos shingles.

(Testimony of John L. Norwood.)

In between all these studs were boards made from 4-inch rock wool batts.

The exterior plaster was $\frac{3}{8}$ job lath and plaster.

The ceiling joists were 2 by 6's. Normally on rooms, the size of these buildings, 2 by 4's are used. In observing the lumber in the jobs, I saw no No. 2 or No. 3 lumber; it was all No. 1 lumber.

The roof rafters were 2 by 6's, 24-inch on center. Normally, that is 2 by 4.

The struts under the roof rafters were 2 by 4's, 24 inches on center. I have never seen that done before. Normally they are 6 to 8 feet on center. All these buildings are 24-inch on center. They have a collar tie on every rafter, which I have never seen before, even in Minnesota and in the Eastern States where they have lots of snow, and so that was unusual, and I noted that.

Above that, they have a solid sheathing and 30-pound felt and asbestos shingles.

The ceiling was also entirely insulated with 4-inch batts of wool.

Everything looked unusually good as far as construction went. There were plenty of nails and everything was straight and plumb.

In the barns, which can be observed because there is [108] no plaster on them, you can see that bolts were used instead of nails, where nails are commonly used, and things like that.

Of course, in the house where things are plastered over, it is difficult to see some of those items without tearing off the plaster.

(Testimony of John L. Norwood.)

Generally, that is about the construction, and I would say that it is about 50 per cent better than anything that I have seen in Southern California or in the Nevada areas, in Las Vegas and Ely buildings.

Mr. Brett: Now, you may resume the witness stand.

When you examined those buildings, on September 8, 1951, did you find any cracks in the walls or the ceilings of the buildings which had been plastered? A. Yes, I did.

Q. And where did you find them?

A. I only observed one area that had cracked and that was in the messhall ceiling. It had been repaired, but I did note it.

Q. Except for that one place, did you find that there were any observable cracks in either the walls or the ceilings of those buildings?

A. I saw no other cracks anywhere.

Q. Now, did you go back to the property on the 30th day of May of 1952? A. I did. [109]

Q. And at that time you met other people?

A. Yes.

Q. Whom did you meet there?

A. Mr. Millard was there; a man, I believe his name was Hall, from the Atomic Adjustment Bureau, I believe, and there was an engineer there by the name of Bruno or Bruner; Bruner, I believe it was. He was from Las Vegas, I believe.

Q. Was Mr. Bartholomae there?

A. Mr. Bartholomae was there. Mr. Seale, the

(Testimony of John L. Norwood.)

ranch foreman, was there, and I believe that was the extent of those present.

Q. And was Mr. Mize there?

A. There was a Mr. Mize there, yes.

Q. An attorney for Mr. Bartholomae?

A. An attorney.

Q. Now, did you inspect those buildings at that time? A. Yes, I did.

Q. In the interior? A. Yes, sir.

Q. Did you find any difference in the interior of those buildings at the time you inspected them on May 30, 1952, from the condition in which you had observed them when you were there and inspected them on September 8, 1951?

A. Yes, I did.

Q. Will you state to the court what differences you [110] observed?

A. The walls in all the plastered buildings, and ceilings—not all the walls, but many of them—were cracked, with quite large and wide cracks.

Q. Will you state the character of the cracks, that is, whether it was a straight line, in a broken line, or how would you describe them?

A. Well, there was some of each type. Most of them were zig-zagging cracks following the plaster lath. A lath that is nailed onto the studs is 48 inches long and 16 inches wide and $\frac{3}{8}$ -inch thick, and the cracks would go along for maybe two or three lengths of lath and then zigzagged across 16 inches, and then across again. Most of the bad cracks would take that course and follow the lath line. There

(Testimony of John L. Norwood.)

were a few cracks underneath the windows, and most of the cracks had an appearance of something twisting—well, as I told Mr. Bartholomae—

The Court: No, no. Don't tell us what you told Mr. Bartholomae.

The Witness: All right.

The Court: You just tell us as to the facts.

A. It appeared to me something had hit the corner of the building, just like a large truck or something had run into each one of those buildings on the same side, and the cracks not only were open but there was a little sort of [111] a twisting look to them. I can show it on the blackboard better than I could describe it.

Q. (By Mr. Brett): Now, you have erected a number of buildings in this locality?

A. Yes, sir, I have.

Q. Buildings which run into considerable money? A. Yes.

Q. And have you also erected buildings in colder climates, in Minnesota or elsewhere?

A. I have designed buildings and supervised buildings in both Minnesota and Chicago. I have not built any there.

Q. Did you examine the foundations of these buildings during your inspection of May, 1952?

A. Yes, I did.

Q. You had examined the foundations during your inspection in September of 1951?

A. I did.

Q. And did you find any changes in the founda-

(Testimony of John L. Norwood.)

tions, in your later examination? A. None.

Q. You are familiar in the course of your work with settlement cracks in foundations, are you?

A. Yes, I am.

Q. And will you describe to the court the general character of settlement cracks in foundations, in buildings [112] of this kind?

A. As to settlement cracks, in buildings of this size, the concrete will actually break and leave a rough joint. Normally there will be a sheering effect. One part of the wall will actually drop below the other. And, normally, it is further apart at the top of the foundation than it is at the base of the foundation, too.

Q. Did you find any settlement cracks in any of the foundations, when you inspected the property May 30th of 1952? A. None.

Q. Did you make any inspection of any other factors, for the purpose of determining whether there had been a settlement in any of the buildings?

A. Well, I checked all of the foundations on my second inspection, to see if there were cracks. I found no settlement or anything at all that would indicate that the foundations had settled.

Q. As a result of your inspections, have you formed a conclusion as to whether or not the cracks which you observed could have been caused by settlement of any of the buildings?

A. They definitely could not have been caused by settlement.

Q. Now, are you familiar with what are known

(Testimony of John L. Norwood.)

in the [113] building trade as curing cracks in works of construction, in buildings?

A. Yes, I am.

Q. What are those kinds of cracks? What does that mean?

A. Well, if plaster dries too fast, or if there is too much—normally, if a wind comes up blowing through the windows and the plaster will check, they are very small air checks. And there will generally be spots of them over a wall, and normally those checks are not over 2 or 3 inches long, but there will be quite a number of them on a wall that gets quite a bit of wind or if the plaster takes too long to dry.

Sometimes, if the plaster is put on in wet weather and the plaster stays wet too long, the board gets soaked up and it soaks into the lumber and it will cause the lumber to swell and also cause a curing check. Around windows and doors, it is diagonal, it runs up at 45 degrees from the corner of doors, normally, or windows, and it is about the width of a pencil line and generally runs off a foot from the corner.

Q. In the construction of the character which you found at the headquarters of the Bartholomae Fish Creek Ranch, what, in your opinion, would be the time after the construction, that is, from the time of completion of the job, within which settlement cracks would occur? [114]

A. Well, normally, if you have any settlement cracks, you get them within one year.

(Testimony of John L. Norwood.)

Q. Do you know when these buildings were erected?

A. I have heard 1941. I am not sure of that.

Q. Did you form an opinion as to whether or not the cracks in the walls and in the ceilings, which you observed during your inspection on May 30, 1952, could have been caused by settlement—or by curing?

A. They definitely could not have been. The buildings had the appearance of being 5 or 6 years old, at least, and I saw no curing cracks. As a matter of fact, as I stated before, I only saw one crack on my first inspection and that had been repaired in the messhall.

Plaster repaired cracks normally show, even though they have been painted over, or repaired. It is pretty hard to get rid of them.

Q. Do you have an opinion as to whether or not the cracks which you observed during your inspection of May 30, 1952, could have been the result of temperature changes over in the area?

The Witness: No. The——

Q. (By Mr. Brett): Do you have an opinion, is the question.

A. That type of temperature changes did not make that kind of a crack, in my opinion. [115]

Q. I take it that you do have an opinion and you have stated it, is that correct? A. Yes.

Q. Will you state your reasons for that opinion?

A. Well, the pattern of the cracks on the ceilings and in the walls show that the building was moved

(Testimony of John L. Norwood.)

by some external force, from the direction of those cracks and from the way that they were twisted and the way the plaster would twist up with the crack.

And, of course, cold weather does not affect plaster. The sudden temperature changes could crack it, but not real cold weather or real hot weather. It is not affected by either one of them.

Q. Now, Mr. Norwood, we have some pictures in evidence. You have seen those photographs?

A. I have seen some of them, yes.

Q. Will you tell me, whether in your opinion, based upon your inspection, there was a substantial defacement of the property, as the result of these cracks? A. Yes, there was.

Q. Have you prepared an estimate as to the cost of repairing those buildings, to restore those interiors to the condition in which they were as you saw them on September 8, 1951?

A. I have prepared a cost estimate, yes. [116]

Q. And will you state what, in your opinion, the reasonable cost of restoration of those buildings, by repairing the plaster and the ceilings, would be as of the date, that is the fall of 1951, to restore them to the condition in which you observed them on September 8, 1951?

A. Well, my estimate which was in September—which was after observing them May 30, 1952, in my bid, which was dated in July, 1952, is for approximately \$5,000.

Q. In your opinion, is that a reasonable cost of

(Testimony of John L. Norwood.)

doing that work at that location, and as of the fall of 1951? A. It is.

Mr. Brett: That is all with this witness.

Cross-Examination

By Mr. Weisz:

Q. Mr. Norwood, did you state that sudden temperature changes can crack plaster?

A. They could, yes.

Q. Now, when you went to the ranch in September of 1951, you were inspecting the buildings for what purpose, sir? A. In 1951?

Q. In 1951, yes, at the first visit?

A. To construct other buildings on the ranch.

Q. In other words, to get the layout of the buildings so they could be duplicated and keep the harmony of the place? A. Right. [117]

Q. And you inspected the walls and the ceilings on the interiors of the other buildings in order to duplicate them in new construction, is that correct?

A. Right.

Q. You were not inspecting for cracks, were you, sir?

A. No. I was inspecting them for workmanship.

Q. Now, Mr. Norwood, you have worked with and have been familiar with work in plaster for some period of time, have you not?

A. Yes, sir.

Q. Is it fair to say, Mr. Norwood, that there is no such thing as a plaster wall without cracks?

A. Yes. It is fair. No. In other words, when we

(Testimony of John L. Norwood.)

build we are very much ashamed when we build a building and we get a crack in it, and it is very unusual when we do get a crack.

Q. Isn't it true, Mr. Norwood, that plaster walls normally, usually, in any area, develop very thin cracks?

A. Occasionally, yes, but not in good construction.

Q. Now, you made an estimate of repair in July of 1952, as to the buildings here, with regard to the cracks, for repair of the cracks? A. Yes.

Q. And was that for pulling off the plaster and replastering the walls, or repairing the plaster that was on the walls? [118]

A. Well, there is no way of repairing the plaster without tearing it off and having it back in its original condition. So I offered something that would be more reasonable or as reasonable and as a substitute. In other words, it would not give them what they had before, but it would be a substitute.

Q. And what was that, sir?

A. To cover the walls in the rooms that were cracked with knotty pine boarding and paint them; paint them and cover the ceilings with a Celotex, acoustical plaster—acoustical board, and it would be put in Mastic on the ceilings and it would cover all the cracks.

In some rooms, for instance, where there were cracks just at the windows, I had just figured on a wainscoting of wood similar to this room here, in knotty pine.

(Testimony of John L. Norwood.)

In other words, that would be about as reasonable a way as you could repair them.

Q. Now, that repaired crack in the messhall that you spoke of, how had that been repaired?

A. It had been filled with probably spackle and painted. It was a straight crack that went, oh, maybe 8 or 9 feet to almost the center of the ceiling and did not zigzag or anything. It was just a straight crack. And it didn't have the appearance of too wide a crack, and it has been filled and enameled over. [119]

The messhall was all enameled on the ceiling and part of the walls down to a wainscoting. It had wood wainscoting in it.

Q. Now, isn't it common practice to repair cracks by either spackling or using Swedish putty to fill the cracks and then size and paint them?

A. Well, it is done, many, many times, because it is the most reasonable way of doing it, but it always shows. We have repair, remodel jobs, where we have that situation, and where they don't want to spend the money to fix it properly, and the next best thing is to patch-spackle the crack, sandpaper it down, smooth it, and cover the ceiling with Sanitas, or the wall, or whatever it is. That is getting up to almost as expensive as putting some wood over it, and then it might work loose. Once you have a crack, it will always work a little bit. That crack can work, because there is no strength there. And if it does work, your Sanitas will buckle and then cause the trouble again.

(Testimony of John L. Norwood.)

Q. Isn't it true that plaster does not have any intrinsic strength?

A. Well, it has some strength, but different plasters, some plasters have more strength than others and some have more give than others.

Q. Well, for instance, on buttonboard and rock lath, there is always a paper backing on that, isn't there? [120] A. Yes.

Q. And isn't it the paper that gives the board sheer strength, that is, against sheering and cracking?

A. The paper is the adhesive that the plaster sticks to and soaks up and the board gives it most of the strength. The plaster has some strength. You can take plaster that is dumped out of a cement mixer and pick it up and it takes quite a bit of strength to break it. It has some strength in it.

Q. Could you tell us again what the estimate was that you made in July of 1952?

A. Well, I gave two estimates. I gave one estimate for \$3,937.03, which was for the lumber or the labor and material for work on the job. Then, in addition to that, I had another estimate, and I have it here, for the subsistence pay for the men, their room and board while they were there.

The job is located approximately 25 miles out of town. Whenever we have any work that far out of town, we have to be paid for that. Then, also, the men have to have travel pay, and I put that in the cost.

Q. And what did that amount to, sir, in dollars?

(Testimony of John L. Norwood.)

A. That amounted to \$1,030.50.

Q. And that was figuring labor from where, from Ely, Nevada?

A. No. That was using my own men from here; in other words, that I would have to pay their time on the road [121] plus their transportation, plus their subsistence, which is \$5.00 per day per man.

Mr. Weisz: All right. Nothing further.

The Witness (Continuing): Which is the recognized union rate. That is the recognized union rate.

Mr. Weisz: No further questions.

The Court: You may step down.

The Witness: Thank you.

Mr. Brett: Now, at this time, if the court please, I will offer into evidence, and as a matter of judicial notice, that part of the official report of the Atomic Energy Commission, which is the 13th semi-annual report and is entitled, "Assuring Public Safety in Continental Weapons Tests," and I refer to that portion of it which is on pages 77 through 89 under the heading of "Public Safety in Continental Weapons Tests." There was a copy annexed to the plaintiff's memorandum heretofore filed with the court and if I could I would like to use that particular one. I take it that it is here. I filed it with my memorandum.

The Court: This one (indicating document)?

Mr. Brett: Yes.

The Court: If it is agreeable with counsel, that may be removed.

Mr. Weisz: That is agreeable, your Honor.

The Court: All right. [122]

Mr. Weisz: It may be removed.

The Court: Just remove it from the file and put it into evidence. Is it attached to the memorandum?

The Clerk: It has been attached to the file.

The Court: It will be received in evidence.

Mr. Brett: Now, I assume that should be given an exhibit number.

The Court: Yes.

Mr. Brett: I believe that will be No. 34.

The Court: Yes, it will be next in order.

The Clerk: That will be Exhibit No. 34.

(Said booklet was received as Plaintiff's Exhibit No. 34 in evidence.)

Mr. Brett: Next I offer in evidence as Plaintiff's Exhibit the little yellow volume. What number is that?

Mr. Weisz: No. 31, I think.

The Clerk: The little yellow booklet, entitled, "Atomic Test Effects"——

Mr. Brett: Yes, it is the official report of the Atomic Energy Commission entitled "Atomic Test Effects in the Nevada Test Site Region," which has heretofore been marked Exhibit No. 31 for identification, and particularly that portion thereof which is on pages 10 through 14 under the heading "The Sound or Blast."

Mr. Weisz: We object to that, your Honor, on the [123] ground that it is hearsay and on the ground that it is irrelevant and immaterial.

Mr. Brett: It is offered on the basis that it is an official Government report issued by one of the executive agencies and is a matter of which the court will take judicial notice.

The Court: Overruled. It will be received.

Mr. Brett: I beg your pardon, sir?

The Court: It will be received.

(Said booklet marked as Plaintiff's Exhibit No. 31 was received in evidence.)

Mr. Brett: Now, I desire next, your Honor, to proceed with the depositions which the Government took, which I am going to offer as part of the plaintiff's case.

Do you desire me to continue now?

The Court: We will recess at this time.

Mr. Brett: I think we can finish all right tomorrow.

The Court: All right. We will recess. We will recess until 9:45.

Mr. Brett: Thank you.

Before your Honor recesses I would like to state that I have obtained a copy of the deposition of Brigadier General Fields, and so has counsel, but neither of us were furnished with the attachments.

I realize that normally we don't break the seals and [124] look at those matters until they are offered, but I would like to see them and I assume counsel would. Unless there is some objection I would like to open and examine them for a few minutes.

The Court: You may have such leave.

Mr. Brett: I did not attend the session in Washington and therefore I did not see them.

The Court: Yes, you may break the seal and examine them.

(Whereupon, a recess was taken until the following day, Wednesday, May 11, 1955, at 9:45 a.m.) [125]

Wednesday, May 11, 1955—9:45 A.M.

(The court hears another matter.)

The Court: The clerk will call the case on trial.

The Clerk: No. 14,795-WB Civil, Bartholomae Corporation versus United States of America, for further trial.

Mr. Brett: Ready for the plaintiff.

Mr. Weisz: Ready for the defendant.

The Court: You may proceed.

Mr. Brett: Thank you, your Honor.

The plaintiff will call Mr. William A. Bartholomae, Jr.

WILLIAM A. BARTHOLOMAE

called as a witness by and on behalf of the plaintiff, having been first duly sworn, testified as follows:

The Clerk: Your full name, please.

The Witness: William A. Bartholomae.

Direct Examination

By Mr. Brett:

Q. Where do you reside, Mr. Bartholomae?

A. In Los Angeles County, Diamond Bar Ranch.

Q. And what position do you occupy with the

(Testimony of William A. Bartholomae.)

corporate plaintiff in this case, the Bartholomae Corporation?

A. I am the president and general manager.

Q. Sir?

A. President and general manager. [128]

Q. You are familiar with its property known as the Bartholomae Fish Creek Ranch?

A. Yes, sir.

Q. And with the improvements that are erected thereon? A. Yes, sir.

Q. Did you have anything personally to do with the erection and construction of those improvements? A. Yes, sir.

Q. What did you have to do with them?

A. Well, I helped in the designs, in the specifications and the actual construction on the job.

Q. When were those buildings erected?

A. In 1941.

Q. Before that time, Mr. Bartholomae, had you had other experience in the design and supervision of construction of buildings? A. Yes, sir.

Q. And had you had such experience with reference to other areas where there were extreme colds and extreme temperatures? A. Yes, sir.

Q. And where? A. In Alaska.

Q. And where in Alaska?

A. Well, both, at three places, Fairbanks, Nome and [129] Teller.

Q. And that was in connection with your company's operations? A. Yes, sir.

Q. Will you state to the court the nature and

(Testimony of William A. Bartholomae.)

the character of the plastering that was done in the buildings that were in the headquarters ranch?

A. Well, we had very low humidity in the area, so we adopted a program of what is known as a 3-coat plaster job over button board.

Q. In which of those buildings was the plaster covered with paint or some other substance?

A. Just in the cookhouse and the dining room area which was all one large room. For sanitation purposes, we painted that room only.

Q. All others then were unpainted?

A. Yes, sir.

Q. Were there any heatings in the Bartholomae cottage during the winter months?

A. There wasn't during the year 1951.

Q. That is, in October-November, from then on, in 1951 there were not?

A. That is correct, yes, sir.

Q. Are you familiar, Mr. Bartholomae, with the fact that there had been a crack in the ceiling of the building [130] in which the dining room is located?

A. Yes.

Q. Which building was that, by the way?

A. That was the messhall. I think that was Building No. 4.

Q. Is that the cookhouse building?

A. That is right, yes, sir.

Q. As shown on Plaintiff's Exhibit 2?

A. Yes, sir.

Q. When did that cracking occur?

A. It occurred in about June of 1943 when we

(Testimony of William A. Bartholomae.)

were engaged in the painting operation of that room.

Q. Did you personally go to the property and inspect it from time to time? A. Oh, yes.

Q. Did you visit the property on May 30 of 1952? A. Yes, sir.

Q. Now, from the date which you have just given, which I believe was 1943, did you regularly inspect the properties? A. Yes, sir.

Q. Up until the time you again visited it?

A. Yes, sir.

Q. And up until May 30, 1952, were there any cracks in any of the walls in any of the buildings, except the one that had been repaired in the mess-hall? [131] A. None that I could see.

The Court: Now, just a minute. Read that question.

(Question and answer read.)

The Court: I don't think you want to ask that question.

Mr. Brett: I beg your pardon?

The Court: I don't think you want to ask that question. There were other witnesses here that testified there were cracks, there were cracks in the fall of 1951.

Mr. Brett: Well, that is true, your Honor.

The Court: He has testified now that there weren't any cracks until May of 1952.

Mr. Brett: Well, I was going to ask him:

Q. When was the last time before May 30, 1952,

(Testimony of William A. Bartholomae.)

that you personally saw the property, Mr. Bartholomae?

A. I would say about September 8, 1951.

Q. That is when it was visited by Mr. Norwood?

A. Yes.

Q. Now, Mr. Bartholomae, what kind of an operation have you had at that location?

A. Well, we have a rather sizable cattle operation, a cow and calf outfit. We have about 350,000 acres.

Q. I am not asking the individual's name, but the designation. Whom do you have as the representative of the corporation on the property, in charge of it?

A. We have a foreman on each of our ranches, and we had [132] one at that ranch.

Q. And in the course of the corporation's operations are there any regulations that you have with reference to reporting by your foreman or superintendent?

A. Yes. The regulations are that the superintendent reports to me by telephone once a week, usually at Friday noon, and during the forepart of the week a written report is made direct to the office.

Q. Is the foreman also required to report any damage to the property or any needs of the property?

A. Oh, yes.

Q. And has that been the course of operations throughout the operation here of this property?

A. Yes, sir.

(Testimony of William A. Bartholomae.)

Q. Who is the custodian of those records of your corporation? A. The assistant secretary.

Q. And what is his name? A. Mr. Loy.

Q. Mr. Loy? A. L-o-y, Stanley Loy.

Q. Mr. Bartholomae, what, in your opinion, was the fair market value of the buildings which comprise the headquarters of the Bartholomae Fish Creek Ranch as of October 1, 1951?

Mr. Weisz: Objected to, your Honor, on the ground that [133] the opinion is being asked of an officer—the corporation as to the market value of buildings on a ranch in Nevada, an opinion which the witness cannot testify to as an expert. I think it is not permissible in these proceedings.

Mr. Brett: If your Honor please, it is adduced on the basis of the law that the owner of property may always express an opinion as to a value, and, of course, a corporation may express it through its executive officer.

The Court: Yes. If that is your objection, the objection is overruled. Unless it is a preliminary question, I frankly don't see the materiality of it. No one contends that the buildings were totally destroyed.

Mr. Brett: Oh, no.

The Court: I don't understand the materiality, but you may proceed.

Mr. Brett: Well, may I state to your Honor that it is my concept that an award to be made can be fixed in various ways. One way is by the reasonable cost of restoration, which we have shown, and

(Testimony of William A. Bartholomae.)

which I will also show through this witness.

The other is by the before and after method of the market value of the property, and that is true irrespective of whether it was destroyed or whether it was injured.

The Court: Well, counsel, at this point it is not material. As I stated, it may be a preliminary question. In [134] other words, the evidence that has been in so far wouldn't be at all material, unless, of course, you are subsequently going to show its value after the occurrence. The objection is overruled, so you may proceed.

Mr. Brett: Mr. Reporter, read the question, please.

(Pending question read.)

A. I will say \$200,000.

Q. Now, you saw the properties during your visit there on May 30th of 1952? A. Oh, yes.

Q. And you examined the condition of the property at that time? A. Yes, sir.

Q. Now, what, in your opinion, was the fair market value of the improvements at the headquarters of the Bartholomae Fish Creek Ranch in the condition in which you saw them on May 30, 1952? A. I would say \$165,000.

Q. Now, will you state your reasons for that opinion?

A. My reasons for that opinion are, first, that in order to restore the buildings it would cost \$25,000 to replaster them; and there would be a ten

(Testimony of William A. Bartholomae.)

to fifteen thousand cost for temporary buildings while the job was in operation for obsolescence, because we would have to carry on our operations there and would need buildings. So I estimate [135] that would be the value.

Q. Now, did you seek to determine what might be an acceptable substitute for replastering?

A. Well, there would be no real substitute, but we did explore the idea of getting the buildings in repair at a minimum of cost and a minimum of inconvenience.

Q. Is it, or is it not true, that you have had substantially continuous operation of putting improvements on your ranch in that area?

A. Yes, over there we do some building every year.

Q. And you personally check and supervise that? A. Oh, yes.

Q. And in connection with that, have you kept yourself acquainted with the possible places from which you could obtain the necessary labor and materials? A. Yes, sir.

Q. Now, what is the nearest inhabited place to the ranch? A. Eureka, the County Seat.

Q. And about how far away is that?

A. About twenty miles.

Q. What is the nearest next inhabited place of any substantial size? A. That would be Ely.

Q. How far away is that? [136]

A. 80 miles.

Q. Now, was there any labor supply, which

(Testimony of William A. Bartholomae.)

would be capable of performing the necessary repairs on these properties, at this town of Eureka?

Mr. Weisz: Objected to as calling for a conclusion of the witness, your Honor, and no foundation laid as to whether this witness would know of labor supply in general or of any particular type in Eureka or at Ely, or in any other place, for that matter.

The Court: Objection overruled. He is asking him if he knows.

A. I did make inquiry. In other words, I asked for bids at Ely.

Mr. Brett: Did the court sustain the objection? I didn't hear it.

Mr. Weisz: The court overruled the objection.

The Court: I overruled that, but his answer is not responsive.

Mr. Brett: That is what I thought. Will you read the question now, please?

(Pending question read.)

The Court: Now, you can answer that yes or no, if you know.

A. No.

Q. (By Mr. Brett): Now, was there any adequate supply [137] at the town of Ely?

A. No.

Q. Did you obtain a firm bid from anyone for the doing of the work? A. Yes.

Mr. Brett: I will ask the clerk to mark these

(Testimony of William A. Bartholomae.)

three sheets as Plaintiff's Exhibit 35 for identification.

(Said three pages of document were marked as Plaintiff's Exhibit No. 35 for identification.)

Q. (By Mr. Brett): I show you Plaintiff's Exhibit 35 for identification, three sheets, and ask you if this is the bid you refer to?

A. Yes, this is the bid.

Q. And is that the lowest bid you were able to obtain from the solicitation of bids?

A. Yes, sir.

Mr. Brett: I will offer that in evidence as Plaintiff's Exhibit No. 35.

Mr. Weisz: No objection. There will be no objection to this.

The Court: It will be received. What is it?

Mr. Brett: It is the Norwood & DeLonge bid.

The Court: Mr. Norwood's bid?

Mr. Brett: Yes, sir.

The Court: All right. It will be received.

(Said three-page document marked as Plaintiff's Exhibit 35 was received in [138] evidence.)

Mr. Brett: That is all.

Cross-Examination

By Mr. Weisz:

Q. Mr. Bartholomae, are you an engineer, sir?

A. Pardon me?

Q. Are you an engineer? A. Yes.

(Testimony of William A. Bartholomae.)

Q. Of what type? A. Civil.

Q. A civil engineer. Now, have you ever lived in the town of Ely, Nevada? Rather, did you live in the town of Ely, Nevada, in the latter part of the year 1951?

A. For a period of not more than a week, yes.

Q. Are you familiar with the labor situation in Ely, Nevada? A. Yes.

Q. When you were in Ely, were you employing labor, particularly construction labor?

A. Not in Ely, no.

Q. Did you employ construction labor in Eureka? A. Yes.

Mr. Weisz: I have no further questions.

Mr. Brett: That is all, Mr. Bartholomae.

The Court: You may step down.

(Witness excused.) [139]

Mr. Brett: The plaintiff will call Mr. Stanley Loy. Mr. Loy, before you go up there, take the original of those papers.

STANLEY A. LOY

called as a witness by and on behalf of the plaintiff, having been first duly sworn, testified as follows:

The Clerk: Your full name, please.

The Witness: Stanley A. Loy.

Direct Examination

Mr. Brett: Will your Honor pardon me for a moment until I show counsel this document?

(Short intermission.)

(Testimony of Stanley A. Loy.)

By Mr. Brett:

Q. Mr. Loy, where do you reside?

A. Diamond Bar Ranch, Los Angeles County.

Q. And what position do you have with the plaintiff, the Bartholomae Corporation?

A. Assistant secretary and office manager.

Q. And did you have that position during the year of 1951? A. Yes, sir.

Q. And continuously since that date?

A. Yes, sir.

Q. Are you the custodian of the records of that corporation? A. Yes, sir. [140]

Q. Do you have in your possession the original of a report dated December 20, 1951, to the Bartholomae Corporation at its Fullerton office, from Arthur J. Seale, Bartholomae Fish Creek Ranch?

A. Yes, sir.

Q. Will you find that please?

A. Do you want me to remove it from the file?

Q. If you will, please.

(Witness removes document from file.)

Q. Now, do you also have in your file, the records of the corporation, a report by Arthur J. Seale to the Bartholomae Corporation, Fullerton office, dated April 27, 1952? A. Yes, sir.

Q. Will you find that, please?

(The witness produces document.)

Q. Now, Mr. Loy, have you had photo copies of those communications made and delivered to me?

A. Yes, sir.

(Testimony of Stanley A. Loy.)

Q. And you have personally delivered them to me so that you have compared them? A. Yes, sir.

Q. And aside from the inked notations which appear on the communications, the communications are in the same form as they were when you originally received them for the [141] corporation?

A. Yes, sir.

Q. And they were received in the ordinary course of business of the corporation? A. Yes, sir.

Mr. Brett: Your Honor, by reason of the California Code that you can use photo copies of these documents and since we have the originals in our office, I am going to have the clerk mark photo copies, but I will show the Government counsel if necessary the originals. I think it is the 1953 State Code. If your Honor isn't familiar with it, I will get it.

The Court: I am familiar with it.

Mr. Weisz: There will be no objection to those being copies. There will be objection to the documents.

Mr. Brett: I understand that. I first wanted to explain to your Honor why I am using the photo copies. I will ask the clerk to mark a photo copy of a two-page letter dated December 20, 1951, as Plaintiff's Exhibit No. 36 for identification and to mark a photo copy of a one-page communication dated April 27, 1952, as Plaintiff's Exhibit No. 37 for identification.

(Testimony of Stanley A. Loy.)

(Said documents were marked as Plaintiff's Exhibits Nos. 36 and 37, respectively, for identification.)

Q. (By Mr. Brett): Now, Mr. Loy, I have the photo copies. You have the originals before you. Will you state whether or not the writing that is on the first page, and I [142] will show it to you, Plaintiff's Exhibit 36 for identification, which reads in figures "12/26/51" and "Loy," is in your handwriting? A. Yes, sir.

Q. Is that your signature? A. Yes, sir.

Q. And what did that date indicate as a part of your records?

A. That indicated the date that I received that document.

Q. In other words, the date that it was received by you as an officer of the corporation?

A. Yes, sir.

Q. And has the original of that communication been in the files and records of the corporation ever since? A. Yes, sir.

Q. Now, in reference to Plaintiff's Exhibit No. 37 for identification, I will ask you if the writing "5/10/52" and the word "Loy" is also in your handwriting? A. Yes, sir.

Q. And indicates the same thing?

A. Yes, sir.

Mr. Brett: At this time, if the court please, I offer the two communications under the provisions of Title 28, Section 1732, as a record made in the

(Testimony of Stanley A. Loy.)

regular course of [143] business, but I offer them for a limited purpose in this case. I understand that receipt of these matters is discretionary with the court and while there are some decisions that are rather broad as to the admission of many things, I offer only that portion of them which refers to the dates and I offer it for the reason, if the court please, that it was apparent, when we took the deposition this spring of the witness Earl J. Seale, that he was very hazy in his recollection of dates.

I offer these as communications received in the regular course of business and as occurring at or about the time or within a reasonable time after the dates which are given therein, and I offer them only for that purpose.

Mr. Weisz: I will object to them, your Honor, on the following grounds:

First, that the regular course of business exception is for a particular purpose, namely, to avoid the necessity of bringing in the person who has made the record himself, and because of the usual course concept here. However, we find first of all, that the first report which occurred was December 20, 1951.

Now, Mr. Bartholomae has testified that reports are made weekly. If the allegations of the complaint are true, then, the last test would have been on the 5th of December. Apparently, this was not the weekly report, from Mr. Bartholomae's testimony, in which damage would have been reported [144] to the Bartholomae Corporation. From a very cursory

(Testimony of Stanley A. Loy.)

examination, I would take it that these reports are letters.

Actually, there is a good portion of the argument that goes to relevancy, and so forth, and the court would have to examine the documents beforehand, before that argument could properly be made.

However, I submit that these are not reports in the usual course of business, but are rank hearsay; that the testimony of Mr. Bartholomae establishes that these are not reports in the usual course of business, and the attempt is made at a later time to put in a hearsay statement for the purpose of refreshing the recollection of a witness whose testimony has already come forward. That is certainly a wide application of the business entry rule.

Mr. Brett: Well, your Honor, I think it is within your discretion.

The Court: The objection will be overruled. Let them be admitted.

(Said documents marked as Plaintiff's Exhibits Nos. 36 and 37 received in evidence.)

Mr. Brett: That is all, Mr. Loy.

Do you have any questions?

Mr. Weisz: No cross-examination.

Mr. Brett: Now, if the court please, as the next part of the plaintiff's case, I am going to read portions of the [145] depositions of three witnesses employed by the United States, whose depositions were taken by and on behalf of the United States, and in so doing I adduce such witnesses as adverse wit-

nesses and I want the record to so show, that they are being adduced as adverse witnesses and pursuant to Section 2055 of the Code of Civil Procedure of the State of California. I will, however, conform to the Federal rule that such excerpts will not be of such character that they will not be a complete reference to whatever material is adduced. I find that under the law, your Honor, it appears to be the proper course to inform the court that we are calling them as adverse witnesses, when we use their depositions. That is the reason I make that statement.

The Court: Well, when you take their depositions, you take their depositions as adverse witnesses.

Mr. Brett: That is right.

The Court: But, as I understand it, these depositions were not taken by you as adverse witnesses. You made two inconsistent statements. As I understand, these depositions were not taken as depositions of adverse witnesses, but that the depositions were taken by the defendant.

Mr. Brett: That is right.

The Court: It is not the taking of the deposition of an adverse witness. However, of course, that doesn't mean that you can't use the deposition, because when the deposition [146] is taken by either party, either party can use the deposition, it doesn't make any difference. When a deposition is taken, either or both parties can use it, whether it is taken as an adverse witness or not. The only thing that is of any importance is when it is being taken as an adverse witness, in the taking of the deposition

itself, in the examination on the deposition itself, then it becomes important whether he is being examined as an adverse witness, because of the scope of the examination.

But, when you have the deposition, you don't have to rely on it. Either party can examine in the deposition.

Now, the only question I want to ask is this: The deposition has been taken. Do I understand that the defendant is not willing to read those depositions into evidence?

Mr. Weisz: They will be read, your Honor.

The Court: Then, of course, it is superfluous. Why would you want to read them, too? Do you want to read them twice?

Mr. Brett: Well, I want to use parts of them to make my case. Now, as I understand it, counsel intends at the close of my case to make a motion addressed to his court for a non-suit.

The Court: All right. And at that time, if you feel that your case is insufficient, because of something that is in those depositions, you can refer to it. In other words, [147] I will not grant the motion without giving you an opportunity to present it to the court; in other words, I will treat it as though they were before the court. I just don't want you to read them twice.

Mr. Brett: Oh, that is all right.

The Court: If they are going to be in evidence. Or you can put them in evidence yourself, the whole depositions.

Mr. Brett: No. I find, your Honor, under the

law we don't have to put the whole depositions in.

The Court: No, you don't have to put the whole depositions in, but I am saying if they are offered, I don't want them in twice.

Mr. Brett: All right.

The Court: In other words, I don't want you to take the time to read, for instance, half of a deposition and then when you get through you are going to again read the deposition in toto, repeating what had been read in before. That is all I am interested in, is the time element.

Mr. Brett: Your Honor, I think that is an excellent idea. I did not understand you would make that ruling if it developed that I should put something in to meet a motion for non-suit. I don't want to repeat.

Then I will rest the plaintiff's case at this stage, with the request that if it develops such as your Honor said, that I may then make a request to put other evidence in. [148]

Now, your Honor, in connection with the motion or any argument I would like to have an opportunity before I answer it, of having about a five-minute recess to have the bailiff get me a few books that I would want to use in replying, and I will ask for that, at that time.

The Court: Very well. You do not plan on making an extended argument, do you, Mr. Weisz?

Mr. Weisz: No, your Honor. I think if the court will allow me, I can adopt the arguments made in our briefs to a great extent, because the court is familiar with the law that has been heretofore cited.

The Court: You are merely going to refer to the matter in your memoranda, in the motion to dismiss?

Mr. Weisz: Yes, sir, your Honor, and I am going to refer to our pretrial order. I am going to make a motion to dismiss on the ground that the plaintiff's case as to each of the four counts set forth in the complaint is insufficient in law, and we are now squarely presented with some of the issues of law that we had set forth where I am contending that as a matter of law, not as a matter of weighing the evidence but as a matter of law, we are entitled to a dismissal at this point, on the grounds (1) no negligence shown; (2) no causation shown in law; (3) the doctrine of *res ipsa loquitur* is not applicable; (4) that the count based on absolute liability is not well taken as a matter of law; and (5) I think to a [149] great extent the depositions that will come in, as far as those are concerned here, will not advert to the fourth cause of action, which is the inverse condemnation count.

The Court: In other words, you are only making the motion as to the first three counts?

Mr. Weisz: Yes, your Honor.

The Court: You are just making the motion as to the first three counts.

Mr. Weisz: As I understand the ruling of the court, the depositions are important as to all counts. Is that your understanding, Mr. Brett?

Mr. Brett: What is that?

Mr. Weisz: That the depositions that you want in are important as to which counts, all of them?

Mr. Brett: Important to all of them, yes.

The Court: At any rate, you are just making the motion to dismiss as to the first three.

Mr. Weisz: As to the first three, yes.

The Court: And you have submitted it?

Mr. Weisz: Yes.

The Court: The motion is denied. We will take a five-minute recess and then you can put on your case.

(Recess.)

Mr. Weisz: Your Honor, with regard to the defendant's case, we will start with the deposition of Dr. Alvin Cushman [150] Graves.

Mr. Brett: Shall I take the stand and read the answers?

The Clerk: May these depositions be opened, your Honor?

The Court: Yes.

(Whereupon, the deposition of Dr. Alvin Cushman Graves previously taken on behalf of the defendant, was read by counsel for the parties as follows, to wit:)

DEPOSITION OF DR. ALVIN CUSHMAN GRAVES

“Direct Examination

Q. Would you state your name, please?

A. Alvin Cushman Graves.

Q. And your address, sir?

A. 1459-46th Street; Los Alamos, New Mexico.

(Deposition of Dr. Alvin Cushman Graves.)

Q. And by whom are you employed at the present time, sir?

A. The University of California; Los Alamos Scientific Laboratory.

Q. And what is the business of the Los Alamos Scientific Laboratory? What is its pursuit?

A. It's a weapons' development laboratory of the Atomic Energy Commission.

Q. And what is your position with the Los Alamos Scientific Laboratory?

A. I am a Division Leader; the laboratory is divided into nine divisions and I head one of those divisions. [151]

Q. Which division is that, Dr. Graves?

A. It's called J. Division. It has the responsibility for conducting these weapons tests for the Laboratory.

Q. Other than as Division Leader, do you have any other positions?

A. I don't understand your question. I am paid by the Laboratory only—I'm not——

Q. I mean, do you function only as a division leader of the Laboratory? A. No.

Q. How else do you function?

A. Well, as a Division Leader of the Laboratory, I'm a member of the so-called Technical Board of the Laboratory, which has the responsibility for establishing laboratory policy; I'm a member of the test organization out here in Las Vegas which actually conducts the weapons' tests; in that particular organization, during the period in question, my title

(Deposition of Dr. Alvin Cushman Graves.)

was Test Director. I am a member of a Committee responsible to the Atomic Energy Commission for establishing classification policy; this is the so-called Committee of Senior Reviewers.

Q. Is there anything further that you function as? A. Not that I can think of. [152]

Q. Will you give us a background, Dr. Graves, of your education and experience since completing your formal education?

A. I attended the University of Virginia, and received a Bachelor of Science degree in electrical engineering in 1931; I attended the Massachusetts Institute of Technology where I took graduate work in electrical engineering. I attended the University of Chicago where I received my Ph.D. in physics in 1939. While at the University of Virginia and also at the University of Chicago, I had various Fellowships, scholarships and instructorships which permitted me to engage in teaching various subjects; at Chicago, in particular, I instructed in physics; from the University of Chicago I went to the University of Texas as instructor in physics; I became an assistant professor, and then an associate professor, and I am, in fact, now on leave from the University of Texas; and in connection with this particular job I still supervise the research work, candidates for advanced degrees, both Masters' and Doctors' degrees in physics.

Right after Pearl Harbor, Dr. Compton, Arthur Compton, called me from the University of Chicago and asked me to come there and engage on what is now known as the metallurgical laboratory. [153]

(Deposition of Dr. Alvin Cushman Graves.)

This is a laboratory that built the first chain reacting pile, and I actually worked on that first chain reacting pile. When that particular job was completed, I left the metallurgical laboratory to go to what is now the Los Alamos Scientific laboratory as a staff member. I became a group leader in the laboratory, engaged in experimental work, then an associate division leader and am now, a division leader in that laboratory.

Q. Have you been conversant then with the Atomic Energy Commission experiments from its inception?

A. Well, the work was first started at Columbia University and was carried on there for about a year before the metallurgical laboratory started. I was not engaged in that portion of the work, so except for the first year, the answer is yes.

Q. Now, boiled down, is it not your job now, to test the atomic devices for the laboratory?

A. For the Commission, actually; yes.

Q. And how long have you been in this particular field of endeavor, the testing of the atomic devices or gadgets?

A. I have been in a senior position since 1947; however, I also participated in the test in New Mexico, in 1945. [154]

Q. Then you have been in on all the nuclear detonations from 1945 on?

A. No, I was not associated with those tests done in Bikini Atoll in 1946, and I was not in-

(Deposition of Dr. Alvin Cushman Graves.)

volved in the detonation in Japan in the war in 1945.

Q. But as to all of the others you have been?

A. Yes.

Q. In the course of your duties as you have reviewed them, did it ever become your function for the Laboratory, to inquire into the need for a Continental Testing Area for atomic weapons?

A. Yes.

Q. When did you make such inquiry?

A. Well, in early 1948 was the first instance, the first time this was seriously proposed, as I recall it.

Q. The prior explosion in New Mexico that was not—or was that set up as Continental Testing Ground, or was that to be a common thing?

A. No, that was a single experiment; there was no intention to make that a permanent proving ground or testing site.

Q. What we are discussing now is the desire for a permanent test site and when did the laboratory, or rather, did the laboratory request a Continental area? [155] A. Yes.

Q. And that was when? A. In 1948.

Q. And do you know the channel through which such a request would pass?

A. Yes. The Commission divides its work up among a number of field offices, of which the Santa Fe Operations Office is one, and the Santa Fe Operations Office exercises direct supervision over the Los Alamos Laboratory work; and hence, the

(Deposition of Dr. Alvin Cushman Graves.)

laboratory's request for such a site would go to the Commission through the Director of the Santa Fe Operations Office; the Commission again is divided up into several divisions, and the one that would receive this particular request would be the Division of Military Application, so that the channel would be from the Laboratory through the Santa Fe Operations Office, through the Division of Military Application to the Commission.

Q. Do you know whether the request of the Laboratory in 1948 passed through those channels?

A. It passed through those channels; it was turned down by the Commission.

Q. By the Commission or the Division of Military Application, do you know?

A. Of my own knowledge, I don't know." [156]

Mr. Brett: In the light of that, your Honor, I move to strike the previous statement as hearsay and as a conclusion of the witness, without foundation.

The Court: What statement?

Mr. Brett: The statement that "It was turned down by the Commission" or that it went through those channels.

The Court: All right. They may go out.

"Q. (By Mr. Weisz): Then, after 1948, when the request went through, was there further detonations? A. After 1948?

Q. Yes. A. Yes.

Q. Where was that?

A. Well, there was the detonation in 1951, and

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there have been detonations since then, of course, too.

Q. I mean prior to the establishment of a Continental Testing Area, between 1948 and the establishment of a Continental Testing Area?

A. Operation Sandstone occurred in the spring of 1948; there was no detonation between Operation Sandstone and Operation Ranger, which was conducted in Nevada.

Q. There have been experiments with detonations in the Pacific, and where was Operation Sandstone conducted? [157]

A. In the Pacific, at Eniwetok Atoll.

Q. You mentioned Operation Ranger, which took place here in Nevada. Was that Operation planned for overseas? A. No.

Q. Were there plans at that time for other detonations? This is 1948, 1949 or 1950.

A. Yes, almost immediately after Operation Sandstone consideration was given to Operation Greenhouse to be conducted in the spring of 1951, at Eniwetok.

Q. And the laboratory was preparing for such an operation at Eniwetok? A. Yes.

Q. Within the laboratory were there objections to conducting that operation at Eniwetok?"

Mr. Brett: At that point, your Honor, the deposition shows this colloquy between counsel in the nature of an objection:

"(By Mr. Brett): In what way is that material to our case? I don't question the fact that the

(Deposition of Dr. Alvin Cushman Graves.)

Nevada Proving Ground was properly selected and used. Is there some element you expect to prove?

“(By Mr. Weisz): I am going into all the reasons [158] and need for setting up the Continental Testing Ground.

“(By Mr. Brett): I’ll stipulate that there was a need and still is a need; I think I would have to assume that anyway. I’m going to stipulate to that, to the facts that you have alleged, that after various studies they decided this was the best area and that it was selected in the manner which you alleged.

“(By Mr. Weisz): Well, I’d want to go over that but I will try and make it fast. May I have the last question read?”

(The reporter then read the question:)

“Within the laboratory were there objections to conducting that operation at Eniwetok?

“A. Well, as I pointed out, the request was made by the Laboratory for a Continental Proving Ground, and this was turned down; then the International situation became more tense and with the advent of the Korean War, it even became questionable as to whether or not an operation could be conducted at Eniwetok with safety. The laboratory felt strongly the need for that series of tests but was worried for fear they would not be able to conduct the tests, and hence, I don’t think you would say there was an [159] objection to the use of Eniwetok. There was a feeling it might be well to

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supplement this Pacific Proving Ground with another Proving Ground.

Q. What were the disadvantages of a Pacific Proving Ground?

A. Tests in Eniwetok are very expensive in terms of manpower and in terms of dollars, and in terms of time. If I take the last first, from the time of Operation Sandstone we had been considering Operation Greenhouse; this was a period of nearly three years and this was about as soon as the Laboratory felt it was able to carry on this Operation. This was a very long time; hence the Laboratory felt that if it could have a testing ground closer, this would be a big advantage to the nation in terms of speeding up weapons development.

In terms of money, the estimate had been given that Operation Pacific would cost about three times as much as an operation at some site closer at hand, and in terms of manpower, in terms of manpower it just took far more people to conduct an operation overseas than it would closer and moreover the people had to stay there a longer period of time.

Q. Could you take the necessary facilities contained in the Laboratory at Los Alamos to the [160] Pacific? Was there a problem involved in not having, or not being able to transport that which you had at the Laboratory to the Pacific?

A. You mean the whole laboratory?

Q. Well, did you feel a need for the whole Laboratory?

A. Well, a proving ground or test site is a

(Deposition of Dr. Alvin Cushman Graves.)

laboratory. You build the facilities you need. At Eniwetok we had a number of different experimental programs involved, and each one required something equivalent to a laboratory, so you take to Eniwetok those laboratory facilities you must have. You don't take others and one of the reasons is there's not enough real estate to put up a laboratory like the one at Los Alamos; it's very difficult to get laboratory equipment to work, too. You have a salt spray condition—it just doesn't work properly. There was no consideration whatever of trying to build a complete laboratory at Eniwetok, just what pieces of it you needed.

Q. Well, what you needed—was that sufficient? You say you take or build what laboratory facilities you needed. Is that a bare minimum or what? What is the effect upon the weapons program in removal to the Pacific Area, and building laboratories [161] and the like?

A. As I said originally, we all have a job at Los Alamos as well as a job in connection with these tests. The fact that a man is going to the Pacific to perform a test means he is no longer available at the home laboratory and the work of the home laboratory therefore suffers, so you would—you take what you must have with you but you certainly don't take more than that because you don't want to handicap the work going on at home.

Q. Then can one work at optimum in the Pacific area with regards to weapons development?

A. No. Many experiments you just can't do at

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all there. Every experiment you do is harder; as I pointed out, your equipment just doesn't work well there; you have to air-condition buildings and even then there is corrosion of equipment; so it's just awfully hard in a tropical atmosphere.

Q. At the advent of the Korean War, to your knowledge, then, was there a problem in getting the necessary material to Eniwetok?

A. Yes, because of the requirements of Korea so much of the shipping of the United States was devoted to transporting things and soldiers to Korea that there was a period of two months, for [162] example, when we didn't have a single ship to take a shipment to Eniwetok; there was very great worry at the time that this would necessitate a postponement of Operation Greenhouse. I saw a teletype from the Commander in Chief of the Pacific to the Chief of Naval Operations which essentially recommended that Cinpak be given top priority on all shipping in the Pacific, which would have had the effect of giving us——"

Mr. Brett: I interrupted there and the following statement was made by Mr. Brett:

"There is absolutely—and I state it for the record—no issue at all that is raised by the plaintiff in respect to the desirability or the legality, or any other elements of the selection and the operation of a Nevada Proving Ground. I don't see how we could make an objection. I don't know if it could be done better some place else or not. While this is all very interesting and if I had time, I would

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like to hear it, I don't see the relevancy. What we have is some tests that the doctor knows most about that occurred at certain times in Nevada at the Nevada Proving Ground; I make no objection; I just can't see the relevancy. There will be no objection.

“(By Mr. Weisz): All right, then, let's try [163] and bring it down. Will you stipulate that there was a definite need for the establishment of a Continental Testing Area?”

“(By Mr. Brett): I will.

“(By Mr. Weisz): That various sites were examined by Dr. Graves and others with whom he was associated in order to find an optimum place for a Continental Testing Area from the viewpoint of numerous factors, one of which was public safety and that the Commission set up an area on that basis?”

“(By Mr. Brett): I will so stipulate.

“(By Mr. Weisz): Here is the other part of it that I want to go over with Dr. Graves, and that is this: The Laboratory prepares an annual program for itself which includes weapons testing, which goes through various channels to the Atomic Energy Commission, which approves it. Later on the Laboratory, which has said in a general way, we want to test certain types of gadgets which are nuclear devices in a period of a year on the annual Laboratory Program; they firm it up a little further and present it through channels to the Atomic Energy Commission stating that they want to test

(Deposition of Dr. Alvin Cushman Graves.)

certain things in Nevada in the spring of whatever year it may be, or the fall. In other words, they select more or less a good general date, [164] the number and type of shots or detonations, the value to be expected, the value to the weapons program to be expected and——”

Mr. Brett: And at that point I interrupted and there was this statement by Mr. Brett:

“Go ahead and let’s see. I think I will stipulate if he isn’t going into detail. I will probably stipulate.”

“Q. (By Mr. Weisz): Dr. Graves, can you tell us how a test series comes about, such as the test series that took place in the fall of 1951, from the Laboratory on through?

A. The original proposal for a test series is presented in a document prepared by the Los Alamos Laboratory once a year; this is called the Laboratory Program and is present to the Commission again through the Santa Fe Operations office and the Division of Military Application. This document will contain a great many items of no interest here on research and so on, and it will contain proposals for the next test series or perhaps even the next two; this will contain a list of tests, detonations, a description of those tests and a proposal for an approximate date for those tests; this is sent by the Commission [165] to two Committees, one called Military Liaison Committee, the other the general Advisory Committee; the Military Liaison Committee is a Military Committee, it essentially

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gets approval or comments from the Department of Defense; the General Advisory Committee is a group of scientists, who look at it from a scientific point of view, and then the program is approved by the Commission.

“As the time of a particular test gets closer the Laboratory sends in a specific proposal for that particular test series. This will repeat the information in the laboratory program in much more detail. It will discuss the amount of fissionable material required in its tests, its geometry, and will justify each of these tests by saying what is proposed to be learned and what will be its effect on the national arsenal of weapons. This goes through exactly the same channels as the Laboratory Program, and is approved by the Commission and then taken to the President and the President himself actually approves the test series and the expenditure of the fissionable material. This then comes back from the Commission to a Test Organization, with instructions to proceed with the test.

This Test Organization then prepares a proposal for this test series, setting specific dates and [166] times for these detonations and setting up a set of experiments which will be done on the detonations and actually says how it proposes to go about conducting that series, with due regard to the safety criteria which has been set up. This letter also is acted upon by the Commission and if approval is then given by the Commission, that is the way in which the particular series will be conducted.

(Deposition of Dr. Alvin Cushman Graves.)

Q. What are these safety criteria you mentioned set up by the Commission?

A. The criteria on which we are operating at the moment are set down by the Commission and are quite general in nature; they involve such things as the following: each shot to be made at the proving ground must be individually justified in terms of its value to the country as a whole; the total number of shots in a series is looked at, must be looked at, to be sure that the total number of shots is reasonable; the yield of a shot is specified for an air drop, a tower shot or a surface shot—the maximum yield for an air drop, tower shot or surface shot is specified. The amount of radio-active fallout is specified in terms of the maximum dose which can be given to anyone outside of the proving ground. Such criteria as that are those that are specified by the Commission. [167]

Q. Is the size, that is the expected yield of the shot, limited beyond the maximum setup?

A. Yes—well, a test is conducted because the Laboratory wants a piece of information. Once the Laboratory has decided it needs a piece of information it devises a device which will give it that information and in devising this—in planning this particular device, it picks as a small device as it can, consistent with the information required to get. This is for two reasons: For the reason of public safety we like to minimize the amount of yield and also for the purpose of conserving fissionable material, so that the Laboratory itself designs an

(Deposition of Dr. Alvin Cushman Graves.)

experiment which is as small as possible, consistent with getting the particular information it requires. Therefore, most of them are much smaller than the maximum values which could be shot.

Q. Were you test director in the fall of 1951?

A. Yes.

Q. Will you tell us what your duties were with regard to any particular shot during that period of time?

A. The Test Director is responsible for determining and firing the devices themselves, when he is instructed to do so. He plans and conducts all [168] of the hundreds of experiments which are done on each shot; he plans the operations that must go on, air operations, and so on, that are connected with each shot. During this series he was responsible for on-site and off-site radiological safety. He is the chairman of an Advisory panel which meets prior to each shot to consider the various factors involved in answering the question: shall we shoot this shot; such questions as, is the weather suitable, are the experiments ready, and so on.

Q. When does the advisory panel meet?

A. It meets for each shot approximately twelve hours before the shot. A briefing of this panel is scheduled, this briefing to consist of weather data, fall-out data, blast prediction data, and so on, and then essentially is on continuous duty from then on until shot time, to look at the subsequent data as it comes in to assure itself that the weather predictions are, in fact, being verified.

(Deposition of Dr. Alvin Cushman Graves.)

Q. Who were the members of the panel, at least their titles, during the fall of 1951?

A. I'm not sure I can recall exactly. I'll name some I know.

Q. Well, we're interested in the function of the man more than the particular individual. [169]

A. The panel at the time consisted of Dr. John Bugher, who is Chief of the Division of Biology and Medicine of the Atomic Energy Commission; Dr. Howard Andrews of the United States Public Health Service; Benjamin Holtzman, whose exact position at the time I just don't remember, but he is one of the most competent meteorologists in the country. Dr. Thomas Shipment, who is the head of the Health Division of the Los Alamos Laboratory. Dr. Walker Bleakley of Princeton University, who is recognized as one of the foremost authorities on shock waves and blast effects.

Q. Do you recall any others?

A. Well, there have been a number of others.

Q. I mean during this period?

A. I think this is roughly the group that was there then. General James Cooney, who was with the Division of Military Application as a radiological safety officer—I don't recall any others.

“Q. Was Dr. Cox part of the panel?”

Mr. Weisz: May I interject at this point. We had previously taken the deposition of Dr. Cox and it will be presented later in the Government's case.

“A. He was part of the panel when Dr. Bleakley left. We had either Dr. Bleakley or Dr. Cox

(Deposition of Dr. Alvin Cushman Graves.)

during [170] this series. Dr. Bleakley was there and was the panel member; Dr. Cox would tell the panel members what his predictions were and then Dr. Bleakley was the panel member who was serving as an expert in this field to advise on this prediction.

Q. And what was your position with this advisory panel?

A. I was the chairman of this panel.

Q. Now, what would the panel do after the initial briefing? Would they poll, or what? What was their function there?

A. This panel sat on duty essentially from then on until shot time; after this particular briefing a number of wind runs are made; these wind runs are presented to the panel; actually, they are posted on a bulletin board and the panel looks at these and can verify for itself that the actual weather is, in fact, verified by the forecast, or is not, as the case may be.

Q. Does the panel confer as to whether the shot will go off or not, is that the purpose of the panel?

A. Yes, this panel essentially recommends to the Manager to shoot, or not to shoot the shot, and then the Manager himself makes the final decision, and shoots or does not shoot the shot, as seems best. [171]

Q. You are the Test Manager?

A. The Test Director.

Q. And as Chairman of the Board, do you take

(Deposition of Dr. Alvin Cushman Graves.)

the recommendation of the panel to the Test Director, Carol Tyler?

A. Yes, he is sitting with the panel actually during this briefing and discussion, and the panel then takes a vote and say, the conditions are appropriate, they will say they will fire; then I will say to Carol, it's rather formal at this point, 'The panel recommends you fire this shot,' and Carol turns to the assembled audience and says, 'We will fire this shot tomorrow.'

"Q. Does the panel meet at the time that Dr. Cox's high explosive results come in?

A. The panel is essentially there—we have essentially a control building, the panel is in that building. If any member of the panel objects to the shot a formal meeting is held; a formal meeting normally is not held.

Q. So the panel remains in session down to the shot time? A. Yes.

Q. And if any member of the panel feels that some disadvantage is involved in shooting at that time, [172] then the panel reconvenes to consider again whether it is advisable to shoot on the scheduled time?

A. Yes, they meet on request; they don't just automatically meet. What would happen in such a case, Dr. Cox would come to me and say, for example, this high explosive charge indicates that there will be quite a shock wave in, for example, Las Vegas or Beatty; then one of two things can happen; either you could cancel the shot or if it does

(Deposition of Dr. Alvin Cushman Graves.)

not seem to be a serious enough situation for that, one could call Beatty and suggest—tell them we think there will be a considerable shock wave there in the morning, and ask that they open windows and take such percautionary measures as that.

Q. Now, with regard to the shots of October 22, October 28th, October 30th and November 5th of 1951, was this procedure followed?

A. Yes.

“By Mr. Brett:”

By Mr. Brett: I then asked, “Which procedure?

“By Mr. Weisz: The advisory panel—the twelve hour survey prior to shot? A. Yes.

Q. Were any one of those four shots delayed, do you recall? [173] A. Yes.

Q. Which one?

A. Well, the series as a whole was originally scheduled to begin on the 1st of October; perhaps a month prior to that time it was evident that we would not be ready for the series by the 1st of October and construction was just not up to schedule and hence, there was a two weeks' postponement in the field. When we were at the site there was a further delay from the 15th to the 19th for the same reason; on the 19th an actual attempt was made to fire the shot but technical difficulties prevented it and a further two-day postponement was taken; then on the 21st the panel recommended against shooting for weather conditions and a twenty-four hour delay was taken and finally the shot was fired on the 22nd; there were other delays on several

(Deposition of Dr. Alvin Cushman Graves.)

Q. Now, did that take place before each—when the shots actually went off there was this twelve-hour situation?

A. Yes, that's what you do; again, in that particular case, where you schedule a shot for the 20th of October, on the 19th of October the panel met at about 9 o'clock in the evening, and suggested a postponement; then on the 21st when there was again a postponement, the panel was held on the 20th at about 9 o'clock to consider whether that shot should be shot, and so on, each time on the day before the shot, you will hold a panel meeting.

Q. But the actual shot, when it went off, went off on the schedule it had been set on at least twenty-four hours in advance?

A. This is true with the exception of one shot where the panel met just before the time of the shot and asked that that shot be postponed for, as I recall it, an hour and a half.

Q. Was that one of the four I have mentioned, the 22nd, 29th or 30th of October or the 5th of November, [177] 1951?

A. That was the one of November 5th.

Q. Was the weather data continuously maintained during this hour and a half period?

A. Yes.

Q. And at the time set, after that hour and a half, did the detonation go off on the schedule that had been set for it?

A. Yes."

Mr. Weisz: By myself: "That's all I have."

(Deposition of Dr. Alvin Cushman Graves.)

“Cross-Examination

By Mr. Brett:

“Q. Doctor, after the test series had been approved and adopted in the manner in which you have described in your direct examination, and came then down to the testing grounds, as I understand it, you and the other panel members had then received both information and instructions as to certain factors, one was that you knew and were instructed to use—that is you knew what was to be used and were instructed to use a certain type of shot, expressed in energy, a certain degree of energy to be exploded, is that right? A. Yes.

Q. You were informed and were instructed to use at least within limitation, a certain amount of fissionable [178] material in a particular test?

A. Yes, sir.

Q. Now, you have referred to the terms air drop, tower shot and surface shot; do those terms mean what seems to be implied by their language; that the starting position of the shot was either on the surface or dropped from the air or from a tower?

A. No. The first two are correct, they were either on the surface or in the air; our blast on a tower is detonated on the tower.

Q. Were those particular matters as to whether or not they were to be an air drop or tower shot or whether a surface shot, were those stated in the information given to you and your group in the instructions? A. Yes.

(Deposition of Dr. Alvin Cushman Graves.)

Q. So that I will understand you and you will understand me, let's assume that there are four tests and they are a, b, c, and d. Now, would test 'a' not only include the amount of fissionable material but also include at least an indication of what, from a weapons standpoint, the Military wanted you to find out through that test, would it include that?

A. The original letter from the test manager to the Commission—say this is the test series we're going to start in this case on October 1st, we're going [170] to shoot—it would include for your shot 'a' the expected yield, the amount of fissionable material required, the dates on which it was—the target date for that shot; it would include the method of detonation, whether an air drop, tower shot or surface shot; it would include the value of the experiment, why it was being detonated from the point of view of both the Laboratory and the Military, and would contain a list of experiments to be done for the Laboratory and for the Military.

Q. Now, in other words, one of the matters that you were intending to test and to gain some information about, was the effect that would be produced from the standpoint of a weapon?

A. Well, if you will let me get technical here a moment, none of the devices tested in that series were weapons; none of these were weapons.

Q. I understand they weren't weapons. You have said this is a weapon testing experiment.

A. I said before, what is done here is to say,

(Deposition of Dr. Alvin Cushman Graves.)

Look, we need a piece of information, then design something which will give you that information, so in that sense it is an experiment, not a weapon.

Q. You were endeavoring to establish by using the amount of fissionable material, the method detailed [180] under the conditions which were indicated, to determine just what would be the effect of that experiment from the standpoint of force, the shock, air shock, to the extent of any fall-out and to the extent of any effective burning or whatever other things that would give information from which it could be ascertained what the effect of that might be as a weapon?

A. That was never a primary objective of these tests; the primary objective of these tests was to find out how you could improve the efficiency of utilization of fissionable material in designing a weapon. That is, if by using, let me use your numbers, by using X pounds or X grams of fissionable materials, you could get, say, a nominal bomb, twenty kilotons; and then if by some scheme you feel you know how to make this same energy yield with half of the X grams of fissionable material, this would be an interesting experiment, and you would design something to find out whether or not you could; so that in these tests it is such an object as that which is always the primary objective; then, since weapon tests are expensive and involve this very expensive material, you utilize these tests for a number of additional purposes and one of these

(Deposition of Dr. Alvin Cushman Graves.)

additional purposes is that the Military makes these experiments to find out what these blast [181] pressures are and what the thermal radiation is, as a function of time and distance.

Q. When you refer to thermal radiation, is that the burn effects of them? A. Heat.

Q. Now, you have stated in some detail, the care that was taken in this Committee, to determine that the prescribed conditions were both available and were in a position to be met; now, if I have interpreted your direct examination correctly, did either you or the Committee or the Test Manager have any authority to make a change in the nature of the test, and by a change I mean this: Could you have, without getting further authorization, have changed the amount of fissionable material that was prescribed for test 'a'?"

Mr. Brett: Before I read the answer to that, I want to be sure the Court heard the question.

The Court: I heard it.

Mr. Weisz: I can reread the question.

Mr. Brett: Yes, reread the question.

Mr. Weisz: "Q. Now, you have stated in some detail, the care that was taken in this Committee, to determine that the prescribed conditions were both available and were in a position to be met. Now, if I have [182] interpreted your direct examination correctly, did either you or the Committee or the Test Manager have any authority to make a change in the nature of the test, and by a change I mean this: Could you, without getting further au-

(Deposition of Dr. Alvin Cushman Graves.)

thorization, have changed the amount of fissionable material that was prescribed for test 'a'?

"A. No.

"Q. Could you have changed whether it was to be an air drop or tower shot or surface shot, that is change it from that which was prescribed in test 'b'?

A. Not without further authority, no.

Q. If the weather conditions, to the extent that you and the other experts were able to test them and prognosticate them, were of the type and character prescribed as those which were to exist at the time the test was to be made, were you authorized in any manner to authorize that the shot be made under different weather conditions, or did you have to, to the extent that you could, comply with those instructions?"

Mr. Weisz: Is that question clear to your Honor?

The Court: Yes.

Mr. Brett:

"A. The instructions never specified the weather conditions [183] which would minimize off-site problems. The instructions were more nearly, 'Pick such weather conditions as will minimize off-site conditions of one sort or another.' It was a job of the test organization, itself, to determine what weather conditions were, in fact, acceptable."

The Court: We will recess until 2:00 p.m.

(Deposition of Dr. Alvin Cushman Graves.)

(Whereupon, a recess was taken until 2:00 p.m. of the same day, Wednesday, May 11, 1955.) [184]

Wednesday, May 11, 1955—2:00 P.M.

The Court: You may proceed.

Mr. Weisz: May we resume the reading of the deposition, your Honor?

The Court: Yes. Please go back three or four questions and start from there.

Mr. Brett: That, your Honor, was the answer commencing on page 28, line 23. Do you want us to review that again for you?

The Court: Yes, just pick up there so I will get the feeling of it again.

Mr. Brett: Yes, your Honor.

(The reading of the deposition of Alvin Cushman Graves was resumed as follows:)

Cross-Examination

(Continued)

“Q. Now, you have stated in some detail, the care that was taken in this Committee, to determine that the prescribed conditions were both available and were in a position to be met. Now, if I have interpreted your direct examination correctly, did either you or the Committee or the Test Manager have any authority to make a change in the nature of the test, and by a change I mean this: Could you, without getting further authorization, have

(Deposition of Dr. Alvin Cushman Graves.)

changed the amount [185] fissionable material that was prescribed for test 'a'? A. No.

Q. Could you have changed whether it was to be an airdrop or tower shot or surface shot, that is change it from that which was prescribed in test 'b'?

A. Not without further authority, no.

Q. If the weather conditions, to the extent that you and the other experts were able to test them and prognosticate them, were of the type and character prescribed as those which were to exist at the time the test was to be made, were you authorized in any manner to authorize that the shot be made under different weather conditions, or did you have to, to the extent that you could, comply with those instructions?

A. The instructions never specified the weather conditions which would minimize off-site problems. The instructions were more nearly, 'Pick such weather conditions as will minimize off-site conditions of one sort or another.' It was a job of the test organization, itself, to determine what weather conditions were, in fact, acceptable.

Q. Let's frame it this way, Doctor: Assume that the instructions in some form were to the effect that you have just stated—that the test shot was to be made when the minimum unfavorable weather conditions [186] existed. Did you or any of this group have authority to change that and say we would like to find out what would be the result if we did it under the most unfavorable conditions?

(Deposition of Dr. Alvin Cushman Graves.)

A. No.

Q. In other words, you had described for you rather distinctly the nature and character of the things that were to be done? A. Yes.

Q. And the description to you was merely this: That you were to use such intelligence as you individually and collectively had, from your experience and such other sources of information as you could obtain to determine that the conditions existed which were the most favorable and at the same time would afford the carrying out of the test which was prescribed, but beyond that you had no right to change the particular specifications under which each test was to be made, is that true?

A. Your question is long. I think the answer is yes. We had considerable latitude in the experiments that were done; in fact, we had complete latitude as to whether we would measure thermal radiation or heat, or what—the types of experiments done were never specified to us. The device to be tested was supplied [187] to us and essentially we had a box, and we were not allowed to probe into that box, and we could make no change in that at all, but there was certainly no latitude as far as public safety was concerned. We were told to do these things in a manner consistent with public safety and we would have been severely criticized, I'm sure, had we done anything contrary.

Q. Well, when you say that you had—that you were severely restricted with reference to public safety, you don't mean to impart by that, that if

(Deposition of Dr. Alvin Cushman Graves.)

you collectively decided it would have been dangerous to detonate at all on the proving ground, a specified amount of fissionable material, that you would have had the right to countermand the order and not do it, do you?

A. I can say, I gave my advice on such matters and it was always taken, that is to setting up the original criteria, the number that was given; I originally gave my advice, which was, do not shoot anything larger than this, so in that sense, we all had a part in establishing the safety criteria.

Q. That is before it had been approved by what we might call a higher level? A. Yes. [188]

Q. After what had been recommended and approved, you would have had no authority to change it, would you? A. That is correct.

Q. Did you cooperate in the preparation of the report which the Atomic Energy Commission made in January, 1953, and that portion particularly which is denominated as Part 3, Public Safety in Continental Weapons Tests?

A. I believe so; this is the semi-annual report?

Q. Yes.

A. No. I'm not—I can't really answer you because I'm not sure where the source of the information in there may have come from."

Mr. Weisz: That report is the one in evidence, your Honor.

"Q. You don't recall then, that you participated in it?

(Deposition of Dr. Alvin Cushman Graves.)

A. I didn't participate in writing that particular document.

Q. Did you participate in writing the document, 'The Effects of Atomic Weapons' prepared for the Department of Defense in 1950?

A. Only in a consultant capacity.

Q. Did you read and approve it after it was completed? [189]

A. I read it; I didn't approve it.

Q. You were not called upon to approve or disapprove it? A. No.

Q. Relating to your testimony about the tests made in October and November, 1951, to the best of your knowledge were any of those tests made with any intent that the energy released should not be released to its fullest extent?

A. I don't understand.

Q. Were there any limitations upon those tests producing whatever effects might occur from the detonation? Didn't you and those who were conducting the tests both anticipate and intend that a certain amount of fissionable material would be exploded under certain conditions, and you were trying to find out what the effect of doing so would be?

A. Again, qualifying my answer just to the extent that the principal purpose of the tests that have been specified was a weapons development purpose, that is, finding out what the efficiency of using fissionable material was, why, the answer is yes, we actually detonated the device to find out what the efficiency was in essence.

(Deposition of Dr. Alvin Cushman Graves.)

Q. Putting it another way, although your [190] preliminary activities and those of the others which had been supplied—that is, the information, the rest of which had been supplied to you, might have indicated that these four tests would probably not cause an air shock upon, say, as example, fifty miles, there was nothing in your instructions and nothing in the intent that accompanied the detonation that you should, in any way, prevent its effect for a hundred miles, if it would have that effect, and, as a matter of fact, you were trying to find out whether or not your beliefs and prognostications would develop as a result of the test, isn't that true?

A. No; I have to say yes and no. I can't answer it all the same way.

Q. I find it difficult because Dr. Cox said it wasn't intended that the weapons produce results beyond certain distances; I want to find out on what you made those calculations. I do recognize from his testimony and yours that you eminent scientists anticipated from previous information the result would be of such and such character at such and such distance. Was there anything insofar as your efforts were concerned that accompanied those efforts by which you sought in any way to eliminate the effects of those detonations? [191]

A. Sure.

Q. What was it?

A. We picked the very best weather conditions we could so these effects would be minimized; I am sure Dr. Cox must have testified that if you have

(Deposition of Dr. Alvin Cushman Graves.)

the wind velocities and directions in a certain pattern that you can have a focusing effect of these shock waves at considerable distances, and it was our intent to minimize this with an attempt to avoid such pattern of winds that would put this focus of shock wave on any populated locality, so that the answer to your question is, sure, we tried to minimize the effects of this blast wave as much as we could.

Q. In any event, you could not definitely predict that certain effects of the explosion would go beyond that which you anticipated?"

Mr. Brett: I think the question was "would not go," but it does read "would go." I didn't catch that at the time, but I am quite sure my question was, "would not."

Mr. Weisz: I will read it again, and I am sure counsel is correct.

"Q. In any event, you could not definitely predict that certain effects of the explosion would not go beyond that which you anticipated?

"A. That's correct. We knew that these shock waves, [192] for example, could be detected at great distances; we had no reason to feel that we could confine any of these effects to your fifty miles, and it was clear once you start a shock wave going, it's going to go.

Q. Anyone would know that, wouldn't they?

A. Yes.

Q. And the very word, that is the word 'test' implies that you were taking a certain factor, to

(Deposition of Dr. Alvin Cushman Graves.)

wit: a certain amount of explosive material, you were taking a certain starting point and a certain method of exploding it? A. Yes.

Q. And you were taking a given factor so far as you could determine it, as close as you could to the time of the detonation, of weather and other conditions? A. Yes.

Q. And then you make the test with the intent and purpose of seeing just what would happen, isn't that true?

A. The intent and purpose was not to see what the shock wave would be at great distances; this was measured after the fact in order that we could see, in case someone wanted to know, but this was not a purpose of the test. I'm not trying to be difficult. [193]

Q. In a report which the Atomic Energy Commission has issued, entitled, *Assuring Public Safety in Continental Weapons Tests*, dated January, 1953, Page 85, there is this statement: 'The air shock wave produced by an aerial nuclear detonation of normal yield is the most important agent in producing destruction.' Do you disagree with that statement?"

Mr. Brett: Now, again, my recollection is that the question was, "Did you agree?" It seems to be borne out by the answer, but the text does read, "Do you disagree."

A. I would. It certainly is open to question but I think it is probably correct; the reason I qualify it is because I know in the Japan drops,

(Deposition of Dr. Alvin Cushman Graves.)

certainly one of the most important effects were the fires that were produced.

Q. Now, am I wrong or am I right? If that statement is reasonably correct with reference to the area of nuclear detonation of nominal yield, would it not be true that the air shock wave would be greater and therefore would be a greater effect if instead of being a normal yield it was a larger yield? A. Yes.

Q. And you know of your own knowledge, that, from the standpoint of the weapons test and the interest of the Department of Defense that one of the [194] primary elements which would be entered in a report of one of these tests would be what had actually been produced as an air shock from such test?

A. Correct—my only question here has been one of degree.

Q. Now, there is one other thing I am not clear on. Was there any question in your mind insofar as any of these four tests made in October, 1951, and November, 1951, that the force which was generated by these explosions would reach these areas which are known as the troposphere? A. No.

Q. The ozonosphere? A. No.

Q. The ionosphere? A. No.

Q. In other words, so far as you personally are concerned, you believed at the time that you gave the indication to the test manager to go ahead with any one of those four shots that there would be a portion at least of the force generated which would go into each of those three areas? A. Yes.

(Deposition of Dr. Alvin Cushman Graves.)

Q. Doctor, in this same report of January, 1953, entitled *Assuring Public Safety in Continental Weapons [195] Tests*, on page 79, it is stated that the only practical method of evaluating one of these nuclear gadgets, so-called here in quotes, is to detonate the nuclear gadget or device in order to test the design and the principle involved, do you agree with that? A. Yes.

Q. Now, it is also true, is it not, that at the time of those tests you knew that there was a certain amount of uncertainty and unreliability in the reactions from those detonations? In other words, that it had already been learned that by virtue of conditions that would come on within a relatively short time and perhaps also from conditions you had not as yet traced down, the shock wave would travel a short distance in one direction and a longer distance in another direction, and it might in some instances leap frog from one point to another?

A. Those effects were known, yes.

Q. Assuming that by some method of testing, some one of the group had been able to convince the group that if you conducted any one of the four tests, there was a possibility that a shock wave might both travel to and cause damage at a location a hundred seventy-five miles away, would you have had any authority to discontinue the test for that reason? [196] A. Sure, we had the authority.

Q. You had authority to discontinue it entirely?

A. For example, if we felt—St. George is about

(Deposition of Dr. Alvin Cushman Graves.)

that distance, I guess, if we had the information which would have indicated that St. George would have been damaged by a shock wave, we had complete authority to discontinue that test; you are talking about under those weather conditions?

Q. I am talking about if it was determined, irrespective of weather conditions or what, that it might cause damage at St. George, did you have authority to discontinue and not make the test?

A. Suppose the Commission had told you, 'You will make that test.' The Commission itself, has the ultimate authority.

Q. As I understand it, at the time you made the tests which stem from the President of the United States, you were told to make these tests.

A. We had the responsibility to go back to the Commission and say, 'This test is dangerous.' It was not only authority not to do the shot, we had the responsibility not to do it.

Q. But unless the instructions were changed you had no responsibility not to make the test?

A. That's correct. [197]

Q. Now, you have had no instructions, even general to taper off, or change those instructions merely on the basis that you might find some isolated ranch building or some isolated group of cattle that would be injured from the test, have you?

A. I don't believe we would be able to be specific as to a dot on the compass and say this shock is going to focus right there; so, isolated ranch buildings—well, we just simply couldn't tell

(Deposition of Dr. Alvin Cushman Graves.)

whether it was going to hit that or five miles from there.

Q. You couldn't either prognosticate or compute down to that fine point and say it won't strike that ranch or that particular locality?

A. We can say it can hit a particular locality.

Q. And by locality, you mean an area of some size?
A. Yes."

Mr. Brett: And I stated that was all.

Mr. Weisz: And "Redirect Examination" by myself:

Redirect Examination

By Mr. Weisz:

"Q. In the proposal from the Los Alamos Laboratory, there is set up initially the expected yield and the type of shot for each one of the tests in a series, is that correct?

A. In that series, yes.

Q. When the Commission authorized this [198] particular test series, did they follow the yield and type of shot recommendation of the Los Alamos Laboratory?
A. Yes.

Q. Then, when it came to time of test, the type of test, the amount of material and the yield to be expected therefrom, those were fixed by that approval of the Commission of the original proposal of the Los Alamos Laboratory, is that correct?

A. Yes.

Q. And it was that from which you could not depart?

(Deposition of Dr. Alvin Cushman Graves.)

A. The test organization, whenever it had a question on safety, would have, in fact it did have the responsibility of saying, 'This simply must not be done.' There was no fooling around with the safety requirement. I can't imagine a condition where the test organization said, 'This is unsafe' and the Commission said 'Go ahead and shoot.' It never happened and I can't conceive it ever happening.

Q. As a member of the Technical Board of the Los Alamos Laboratory, can you tell us whether safety factors were considered in making the original proposal for the test series of the latter part of 1951? [199] A. Yes.

Q. The blast effect that is produced by the atomic detonation, is that blast effect the same as that produced by a high explosive detonation?

A. Essentially, except in degree.

Q. Except in degree. In other words, we have merely the law of physics and meteorology applied to the effect of a detonation of any type?

A. This is essentially true, yes."

Mr. Weisz: And by myself: "I have nothing further."

Then, there is

"Recross-Examination

By Mr. Brett:

"Q. Counsel again has referred to yield. Yield as I understand it is an estimate of the energy?

(Deposition of Dr. Alvin Cushman Graves.)

A. That is correct.

Q. Am I wrong in my assumption that you did not, in making the recommendation to the Commission which you have stated went through the various steps which you detailed, to the President and finally came back to you at the Nevada Proving Ground, that that did not include any specification to the effect that it will cover only ten or twelve miles or fifteen miles, or anything of that kind, or did it include that?

A. No, sir, it didn't. It included general provisions that you will conduct these tests with due [200] regard to public safety.

Q. Now, in reference to public safety, what you are referring to is that the United States Government, operating through this method that you detailed in your direct examination, did not want to cause a catastrophe in any community near the Nevada Proving Grounds. You don't mean they were to discontinue one of the tests if your Committee considered it and then they decided it would break glass windows or crack one or two ceilings in Las Vegas, do you?

A. We could not have made such a determination. One would never have the knowledge that you would break a window or crack plaster in Las Vegas; you just don't have it.

Q. Assuming in some manner that you could have determined that if we go ahead with test 'a' there is a strong possibility that a few houses in Las

(Deposition of Dr. Alvin Cushman Graves.)

Vegas may have some plaster cracks, and maybe one or two stores may have windows crack, is that what you mean by public safety, to ask the Commission to allow you to change the test?

A. No.

Q. What you have in mind then is something that would cause severe damage, maybe injure or kill people, maybe devastate an area to that extent— [201] reduce it to rubble or something of that kind, something in a degree that it would directly or substantially affect the public safety as a group rather than isolated areas?

A. If we would have hurt anybody, any one person we would not fire a shot. If we knew that we would pick up a rock and hit a person on the head with it and crack his skull, we would not have fired it.

Q. You would not have had a way to determine that, would you?

A. No. You asked a hypothetical question—we had no way of finding out, we didn't know we were going to break a window in Las Vegas, so we would just have no way of promoting public safety to the extent of guaranteeing we would never break a window.

Q. I assume that these tests caused not only a certain amount of work but a certain amount of expense, did they not? A. Yes.

Q. Well, in making a particular test, you were endeavoring to get some information you didn't have prior to that time, is that right?

(Deposition of Dr. Alvin Cushman Graves.)

A. Yes.

Q. And either in the manner of firing a shot or in the intensity, that is an increase in the amount [202] of energy you were making some change from the test previously made?

A. Either in intensity——

Q. Or in the manner?

A. Or in the design of the device itself.

Q. And the purpose and intent was to find out what would be the effect of conducting that experiment as to prior experiments?

A. That's right."

Mr. Weisz: And by myself again:

"Q. In practical use of the term public safety, do you mean maintaining limits such that the atomospheric pressures and radioactive fall-outs beyond the test area are kept to a minimum whereby persons or property will not be damaged to the best of your knowledge?

A. That is correct. This does not mean that you will have zero shock wave."

Mr. Weisz: And both of us indicated there was nothing further from that witness.

We will next offer the deposition of Brigadier General Kenneth E. Fields. Have you that deposition before you, Mr. Brett? Do you have that deposition?

Mr. Brett: No. I have only this one.

Mr. Weisz: Can we have General Fields' deposition, [203] please?

Mr. Brett: Mr. Clerk, that is the one I was permitted to open last night and I returned it.

Mr. Weisz: I will state to the Court the deposition of General Fields was received unsigned with a certification from the reporter to the effect that he had made diligent effort to find the deponent. Counsel does not object to that fact——

Mr. Brett: Not to the fact that it is unsigned.

Mr. Weisz: ——in our conversations. However, certain changes, mostly minor, were apparently made at the suggestion of Mr. Gorvine who is from the Office of the General Counsel of the Atomic Energy Commission, and despite the fact that it may render the deposition a little less intelligible, I was wondering as to the propriety of keeping the deposition in its original form rather than with the corrections that were made by Mr. Gorvine.

The Court: Well, of course, as to Mr. Gorvine, no one has any right to make any corrections except the witness, but you are not raising any question with respect to it not being signed?

Mr. Weisz: No, your Honor.

Mr. Brett: As a matter of fact, counsel have discussed it. I would suggest that when we come to the corrections we might indicate them to the Court. I think there are a [204] few exceptions, but in the main they appear to be——

The Court: Typographical?

Mr. Brett: No. The reporter has endorsed the reporter's errors with his initials. Apparently after it has been typed out, he has gone over his notes,

and I conclude in doing so he noted he had made errors. Now, I take it that is what it means.

The Court: Well, that is different. If they are the reporter's errors, then, of course, those corrections may be made. That is just the same as if he torn it up and had retyped it.

Mr. Weisz: Well, there are very few changes and I suggest you can just rule on them as you come to them. I have no objection to leaving them either way, either the original text or the corrected text.

Mr. Brett: If we can indicate to the Court where a change has been made and then your Honor can accept the situation in which you feel the deposition was given, then it will be best.

The Court: All right.

Mr. Brett: May I say, at this time, your Honor, in connection with the last deposition, simply in order that your Honor will have it in mind, and the deposition of Dr. Cox, there is a variance between the two men as to whether or not it was anticipated that these shocks would go into [205] the elevations beyond what is called the troposphere, Dr. Cox saying it wasn't anticipated and this last witness saying it was. Then, there is testimony that will come in by Dr. Cox to the effect that any damage over and beyond certain distances would come through those higher elevations. I merely bring this up so when you reach those points your Honor will have that in mind. Of course, a lot of this is relatively general.

The Court: Very well.

(Whereupon, counsel for the parties read the deposition of Brigadier General Kenneth E. Fields taken on behalf of the defendant as follows:)

Mr. Weisz: This is the direct examination by the Assistant United States Attorney for the District of Nevada.

Mr. Brett: May I further state, your Honor, that no one appeared at the taking of the deposition in behalf of the plaintiff, and both through stipulation and in accordance with a provision of the rules, the plaintiff prepared written interrogatories and you will find those later, and there were submitted answers to the written interrogatories.

DEPOSITION OF BRIG. GEN. K. E. FIELDS

Direct Examination

“Q. Will you please state your name for the record and your rank and assignment?

A. Kenneth E. Fields, Brigadier General, United States Army. I am the Director of the Division of Military Application of the Atomic Energy Commission. This is a [206] statutory position which according to law must be filled by an officer on active military service.

Q. You are assigned to the Atomic Energy Commission? A. Yes.

Q. How long have you held this position, General? A. Since August 21, 1951.

(Deposition of Brig. Gen. Kenneth E. Fields.)

Q. Directing your attention to the months of September, October and November of 1951, what was your principal duty as Director of Military Operations in particular regard to atomic weapons tests in Nevada?

A. I was responsible for the supervision," and here is the first correction. There is the word "and" stricken out.

Mr. Weisz: And as it reads originally:

"and carried on from the Commission headquarters, of the test operations. As such it was my responsibility to recommend the program of the tests and to see to their execution.

"Q. General, you mentioned the program of the tests. Were you the person who was responsible for outlining what tests were to take place? In other words, did you determine how many bombs were to be tested or other weapons and did you determine the size of the weapon to be tested in the initial stage? [207]

A. I was responsible for developing the program on the basis of recommendation of the Los Alamos Laboratory and of the Department of Defense, for securing the necessary judgments of the General Advisory Committee of the Commission, and for making then of my own recommendations to the Commission as to the program that should be carried on in the interest of the furtherance of the weapons program.

This did include considerations of the justification of the different parts of the program, the

(Deposition of Brig. Gen. Kenneth E. Fields.)

costs of them, the advantages to be gained, and the feasibility of conducting the experiments that were proposed at the Nevada test site—Nevada Proving Ground.

Q. And was your recommendation to the Commission subject to Commission approval?

A. Yes.

Q. You mentioned the Nevada Proving Ground. Who determined the location of that proving ground?

A. The Commission in collaboration with the Department of Defense selected the Nevada Proving Ground as the location for a continental test site.

Q. Isn't it a fact, General, that the President of the United States had some part in the determination of the site of this proving ground? [208]

A. I am sure the President was fully aware that atomic tests would be conducted at this proving ground. I believe he actually approved it, but I am not cognizant of it right now. I could check this in the files."

Mr. Brett: I make no objection to the fact it is hearsay.

"Q. When was the choice of the Nevada Proving Ground actually made effective? In other words, when was that proving ground so designated?

A. The proving ground was so designated and established late in 1950.

Q. Did you have any part in the selection of that site personally, General?

(Deposition of Brig. Gen. Kenneth E. Fields.)

A. No, I did not. My predecessor did, though.

Q. Going back to the test in 1951, you have testified that one of the considerations that fell to your responsibility was justification of the program.

In 1951, what was the primary objective of the program of tests conducted at that time?

A. The primary objective was the furtherance of the weapons program in the sense of improving the efficiencies of the weapons, or the developing of new types of weapons. In addition there were some experiments whose purpose was the study of the military effects, [209] locally and close to the point of detonation, of some of the experimental detonations that were to be conducted.

Q. General, would you say that the primary objective was closely related to national defense?

A. Yes. That was the primary objective.

Q. Now, did you say the Commission has any other test site either continental or outside the continental limits of the United States? A. Yes.

Q. Isn't it a fact, General, one of those test sites is outside the United States; far out in the Pacific? A. Yes.

Q. And what is the purpose of having a site located far out in the Pacific?"

Mr. Brett: I would object to that as immaterial, as having no relation whatsoever to this case. I will read the answer, however.

Mr. Weisz: Frankly, your Honor, the question and answer are relatively most unimportant.

The Court: Well, it is immaterial, unless it is a

(Deposition of Brig. Gen. Kenneth E. Fields.)
preliminary question. The objection will be sustained.

“Q. In making the determination to conduct a test in the Pacific rather than at the Nevada Proving [210] Ground, is that determination one of your responsibilities, General?

A. Yes, it is, in the sense that it is my responsibility to recommend to the Commission what should be done.

Q. And in making such a recommendation would you consider the potential blast effect of any device to be tested; that is in making recommendations as to whether such test should be conducted in Nevada or in the Pacific?

A. Yes; along with many other considerations.

Q. If in your judgment the device to be tested would result in a blast effect that might endanger life, limb, or property within the United States, would it be your responsibility to recommend that such test be conducted outside the United States or not at all?

A. It would be my responsibility to make such a recommendation if I considered there was real hazard of such damage.

Q. During the 1951 experiments did you make any recommendation that the test not be conducted at the Nevada Proving Ground? A. No.

Q. In other words, General, in your judgment at that time there was no serious hazard within your [211] knowledge that would result from the test to be conducted? A. That is correct.

(Deposition of Brig. Gen. Kenneth E. Fields.)

Q. Now, going back to the question of justification of the program I ask you what area is the Commission interested in from the standpoint of blast effect for purposes of these tests at the Nevada Proving Ground?

A. The Commission is interested in securing information, or was interested and is, in securing information on the effects of atomic explosions on instrumented structures and equipment within the Nevada Proving Ground. These are all relatively close in to the detonation point.

Q. When you say relatively close in, would that include a radius of over 100 miles?

A. It would not. It would be of the order of miles—it would be several miles.

Q. It would be less than 100 miles that the Commission would be interested in testing?

A. It would be much less.

Q. General, what instructions, if any, emanate from your office to the person in charge of the test at the proving ground concerning public safety?

A. Fundamentally it was his responsibility for [212] firing the specific detonations under the best conditions that could be realized. However, in determining the safety of the public at large—the determination that it is safe to fire this detonation from the standpoint of people”——

Mr. Brett: Now, here again is a correction, but I will read it first as it was originally and then I will read it as corrected:

“from the standpoint of large and great distance

(Deposition of Brig. Gen. Kenneth E. Fields.)

was made in the process of approving the program itself, at which time it was considered.”

Then I will read it as corrected, and this is one in which the reporter’s note says “Reporter’s error.”

“the determination that it is safe to fire this detonation from the standpoint of people located at great distance was made in the process of approving the program itself, at which time it was considered.”

“Q. In other words, General, it was impractical to set up any rigid criteria with reference to safety; such criteria to be followed by the test engineer?

A. It is impractical, too, to set up a catalog of specifics that the test manager would follow in detail in the determination of the time of any specific detonation.

Q. You mentioned the best conditions obtainable [213] for conduct of these tests. Will you tell us some of the factors that enter into the conduct of one of these tests from the standpoint of public safety?

A. The factors are essentially radiation—fall-out of radioactive materials.

Q. If I may interrupt you, General, I meant some of the factors that would effect those dangers. In other words, whether or not weather conditions would affect the dangers of fall-out, blast, etc.?

A. The principal factors are fall-out of radioactive materials, blast heat, and light. Of these the most critical one in the Nevada Proving Ground

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with the limitations we have set on ourselves as to what we will fire there is that of fall-out of radioactive materials. Those are the principal and effects.

Now, what you obtain in those end effects is largely dependent on the weather conditions that prevail at the time; that is, wind velocity and direction, clouds and cloud coverage, and meteorological factors of that sort. Depending upon those the various effects—that is fall-out, and blast, light—are changed in one way or another. For example, under certain conditions, say a very high wind velocity”——

Mr. Brett: I will read it first without the corrections:

“with tall elevations”—I am sorry, your Honor. It [214] is scratched out. I can’t read it, but I will have to read that as corrected, because he says it is the reporter’s error. Apparently he has excised it by erasure, that is the original text. Does your copy show the original text, Mr. Weisz?

Mr. Weisz: No. There was an erasure. I don’t know whether that was done before it was read.

The Court: Well, he has the corrected version as noted by the reporter. Of course, I don’t know that the reporter made these corrections. That is the important thing. If some third person made the corrections, he has no right to make the corrections for the reporter. If the reporter made the corrections, of course, the reporter has the right to make the corrections from his notes.

Mr. Brett: Yes, your Honor.

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The Court: Before he ever presents it to the witness. So I am assuming that the reporter himself made those corrections, is that correct, where you have those notations, "Reporter's error"?

Mr. Brett: I think that where he put in "Reporter's error" it is reasonable to so assume, from the fact that he did not make that notation at other points.

The Court: Well, neither one of you is making a point of that. You are accepting the correction as the correction by the reporter of the reporter's error, is that right? [215]

Mr. Weisz: Yes, your Honor.

Mr. Brett: Yes, your Honor.

The Court: Very well.

Mr. Brett: Now, of course, the corrected version of it reads:

"For example, under certain conditions, say a very high wind velocity at all elevations, and in the same direction, serious fall-out could be obtained at relatively great distance from the detonation point. This is a condition under which we would not fire.

Q. General, are these weather conditions or factors taken into consideration at the initial stage of approval of any test series from Washington?

A. Yes, and, as a matter of fact, basically the prevailing meteorological conditions led to the selection of the Nevada test site. Such factors as precipitation, prevailing wind direction, velocity of wind; all these factors lead to knowledge of the frequency of conditions under which the types of detonations

(Deposition of Brig. Gen. Kenneth E. Fields.)

that we carry on at Nevada can be fired safely. It was the fact that there is a large frequency of such conditions under which detonation can be fired safely that led to the selection of Nevada as the proving ground.

Q. Directing your attention to the objectives of these test series you mentioned—furtherance of the [216] weapons program and development of new types of weapons and improvement of efficiency—do you mean that one of the objectives is to see how big a bomb can be exploded at the proving grounds?

A. No, that was not the objective. The real objective of all of it, of course, is to improve our capability—capability of the United States and”—

Mr. Brett: The original text reads, “its atomic weapons it has in the stockpile.”

Mr. Weisz: There is a correction not initialed, which changes it to read:

“——and the atomic weapons it has in the stockpile.”

It is my opinion it doesn't make any difference, particular difference. Either text is satisfactory to me.

The Court: Very well.

“Q. When you say improvement of efficiency does that include the testing of small devices as much as it would include the testing of larger devices? A. Yes.

Q. When you say development of new types

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would that necessarily mean bigger types of weapons? A. No.

Q. When you say the furtherance of the weapons program did you mean to convey the idea by furtherance [217] of the weapons program it would be to test bigger weapons?

A. Not necessarily. It might be applicable to bigger weapons or smaller weapons. It is improvement in the knowledge of bomb physics. Really to improve design of weapons for one purpose or another.

Q. In all of those tests the concern of the Commission is limited, from the standpoint of the results of the test, is it not limited to the proving ground area?

I am afraid the question isn't very clear. I ask again, General, is it the objective to test the effect of those weapons over an area beyond the proving grounds?

A. There is no purpose, in going forward with a test program in Nevada, aimed at determining the effects of these weapons outside of the test site."

Mr. Brett: And then the words "I don't know" appear and are stricken.

"As a matter of fact it is within the quite small area within the test site itself." And the word "the" is changed to "a", so it reads, "within a quite small area within the test site itself."

"Q. General, from time to time there have been reports appearing in the paper concerning broken

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windows in communities located as much as 75 miles away from the [218] test area.

I ask you whether or not such property damage is anticipated in the conduct of those tests?

A. We know that the possibility exists that the test explosion might cause some minor damage outside the limits of the test site. We take all reasonable precautions to minimize this in selecting the conditions under which we fire.

Q. I think that completes our interrogatories unless there is any point you think we ought to cover or the General thinks we ought to cover."

There was a discussion off the record and then the Assistant United States Attorney resumed:

"General, is it a fact that the Commission actually approves each test series? A. Yes.

Q. And what is the nature of the approval emanating from the Commission?

A. The approval specifies the number of shots, the type of shots, the expected yield of those shots, their method of detonation, the amount of fissionable material that can be expended in them, all those decisions being reached on the basis of consideration of the purposes of the shots and the feasibility of detonating them in the Nevada Proving Ground. [219]

Q. What part, if any, does the President of the United States take in approval of any test series?

A. The President approves the holding of a series of tests, number of shots in it and the amount of fissionable material that will be expended.

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Q. Once this approval has been issued by the Commission and the President, what authority is vested in the test engineer at the Nevada Proving Ground or test site to deviate from the approval as issued?

A. He has no authority to deviate from the approval.

Q. In other words, General, if the approval called for six tower shots and six air shots the test engineer in charge of the testing at the proving ground would not have authority to detonate seven tower shots and five air shots?

A. That is correct. He would not have such authority.

Q. He would not have authority to deviate as to the amount of fissionable material to be used in the series?

A. That is correct. He would not have authority.

Q. And he would not have authority to deviate from the approved yield in any given series? [220]

A. That is correct.

Q. General, could you explain for the record the term 'yield' in layman's terms?

A. Very briefly, when we speak of yield we do so in terms of the equivalent amount of T.N.T. that would give the same explosive power.

"Mr. Stetson: At this time I will ask the Notary to propound the plaintiff's interrogatories to the witness."

Mr. Weisz: Whereupon, the written interrogatories were propounded through the Notary Public

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to the witness, and the questions here are the interrogatories.

The Court: I think we will take our afternoon recess.

(Recess.)

Mr. Weisz: Your Honor, continuing with the plaintiff's written interrogatories to this witness, to a great extent this is not cross-examination and I don't care to, as to each question, point out that fact, and I would like to ask counsel, through the Court, whether this was considered as examination in chief or cross-examination?

Mr. Brett: Well, I do not know that I could define it. It is examination. That is the only thing I could say. Of course, I had no knowledge of what the examination in chief would be. This was adduced through my questions of the witness. [221]

The Court: Where was the deposition taken?

Mr. Brett: In Washington, D.C.

The Court: And what arrangements did you have before? Did you have arrangements to submit interrogatories to him?

Mr. Brett: Yes, sir, by stipulation.

The Court: What difference does it make? In other words, you had entered into a stipulation. Of course, what you are doing is a little bit irregular in that he took a deposition and you submitted written interrogatories. Ordinarily the person taking the deposition would submit interrogatories, and cross interrogatories could be submitted and it

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could be taken on interrogatories; or if you were going to take a deposition not on interrogatories, it would be on oral examinations. But you have done it a little differently here and you stipulated. You couldn't get back to Washington, and you entered into a stipulation to submit written interrogatories?

Mr. Weisz: Yes, sir.

The Court: So it is half "fish" and half "fowl." In other words, the United States Attorney was taking the deposition and the plaintiff in the case submitted interrogatories on a stipulation. Obviously, the interrogatories couldn't be cross-examination because you couldn't cross-examine before the examination has taken place. So, I don't know. If you have a stipulation that he could submit those interrogatories, [222] I don't see how you could object, now, to the submission of the interrogatories.

Mr. Weisz: Oh, no, your Honor. I was merely clarifying the point for the purpose of considering that the witness becomes a witness for the plaintiff and not for the defendant.

Mr. Brett: There is no question about that, but under the law he is an adverse witness to the plaintiff and as such we are not bound in the sense that we can't offer contradictory evidence. I have the law on that, if there is any question.

The Court: Well, is there any question that becomes of any importance?

Mr. Weisz: No, your Honor.

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The Court: Then we are wasting a lot of time.

Mr. Weisz: Thank you.

DEPOSITION OF BRIG. GEN. K. E. FIELDS
(Continued)

“Q. In connection with the test series of nuclear explosion experiments which were made at the Nevada Proving Grounds during October and November of 1951, state whether or not each of the following authorizations, proposals, recommendations, reports, or decisions was in writing:

(a) The proposal of the Director of the Los Alamos Scientific Laboratory? A. Yes.

Q. (b) The transmittal of such proposal by and [223] through the Manager of Operations of the Santa Fe Operations Office to the Director of the Division of Military Application in Washington, D. C.? A. Yes.

Q. (c) The transmittal and accompanying recommendation of the Director of the Division of Military Application to the Atomic Energy Commission? A. Yes.

Q. (d) The decision of the Atomic Energy Commission? A. Yes.

Q. (e) The report of the Atomic Energy Commission to the Special Committee on Atomic Energy of the National Security Council?

A. Yes.

Q. (f) The report and recommendation of the National Security Council to the President?

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A. I do not know. There is no record of this in our files; as naturally there would not be.

Q. (g) The President's authorization?

A. Yes.

Q. (h) The authorization and direction of the Atomic Energy Commission to the Test Manager?

A. Yes.

Q. (i) The direction and instructions of [224] the Test Manager? A. Yes."

Mr. Brett: Pardon me, just a minute. I might state, your Honor, that in the original motion for summary judgment and as a part thereof, there was an affidavit of one Walter Williams, who was an official of the Atomic Energy Commission, in which he alleged that these particular steps were taken, and that is the basis under which these questions were asked.

"Q. Two. In respect to those matters referred to in questions 1 (a) to 1 (i), inclusive, as to which you have made affirmative answers, please identify with the designation W1, W2, etc., to the closing consecutive number preceded by 'W' and annex to this deposition true copies of each of said writings which will be marked by the Notary as Exhibits 1 to the closing number consecutively for identification.

A. I respectfully decline to annex these writings on the grounds of privilege, with the exception of the writing referred to as 'd' above, which I am providing herewith with the nomenclature W-5."

Mr. Brett: That (d) above was the decision of

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the Atomic Energy Commission and annexed to the deposition in this statement:

“At Meeting 608 on September 26, 1951, the Commission approved the recommendation of AEC 446/16. [225]

“ROY B. SNAPP,
“Secretary.”

“Q. Three. If any of such writings contain restricted data as defined in Title 42 U. S. Code, Sections 1810 (a) and 1810 (b) (1), and such restrictions cannot be waived, make an express statement to such effect and identify and annex as exhibits for identification in the same manner as described in Question 2, copies of such documents from which such restricted data is deleted, or in the alternative, summaries of the general contents of each of such documents as so deleted but as to include identification and description of these particulars:

(1) The originator and recipient; (2) the date; (3) the respects, if any, in which any reference is made to, directions are given as to, or control is exercised over any function, duty or action of the agents of the United States who were finally authorized and directed to conduct the tests of the nuclear weapons which were exploded at the Nevada Proving Grounds during October and November of 1951.

A. As I answered No. 2, there are restrictions that cannot be waived with respect to all the writ-

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ings with the exception of that reference in 'd' in
Question 1. [226]

I am supplying summaries of the general contents of writings with reference to the various papers of Question 1 with the exception of 'f' on which I have previously stated I am not informed."

Mr. Brett: In order to make this intelligible, 'f' was the report and recommendation of the National Security Council to the President, as to which he said he did not know, "There is no record of this in our files; as naturally there would not be."

Then there are annexed to this deposition the following documents:

As to W-1, which was the proposal of the Director of Los Alamos Scientific Laboratory, it states,

"Originator: Norris E. Bradbury, Scientific Director, LASL," which I assume refers to the Los Alamos Scientific Laboratory.

Mr. Weisz: Scientific Laboratory.

Mr. Brett: Scientific Laboratory.

"Recipient: Brigadier General James McCormack, Director, DMA, AEC," and that means Division of Military Application, AEC.

"Date: August 17, 1951.

"This letter forwarded via Carroll L. Tyler, Manager, Santa Fe Operations. The letter dealt with design and justification for each of the items LASL proposed [227] for testing."

W-2 is in response to (b), which was "The transmittal of such proposal by and through the Manager of operations of the Santa Fe Operations Office to

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the Division of Military Application in Washington, D.C." It states, "Same as W-1. Carroll L. Tyler signed letter in customary manner to indicate that it had been forwarded through his office.

W-3 refers to (c), which was the transmittal and accompanying recommendation of the Director of the Division of Military Application to the Atomic Energy Commission. It reads:

"Originator: Director, Division of Military Application

"Recipient: AEC Commissioners

"Date: September 7, 1955."

Mr. Brett: I feel certain, your Honor, that must be a mistyping.

The Court: It has to be.

Mr. Brett: Sir?

The Court: It has to be.

Mr. Brett: Yes. And if counsel will stipulate, I will stipulate that it may be amended to read "51."

Mr. Weisz: I will be happy to so stipulate.

Mr. Brett: I will give it to the clerk later to correct it according to the stipulation.

"This report AEC 446/13 is classified Secret and contains [228] the Division of Military Application Director's recommendation that the Commission approve the program submitted by the Director, LASL.

"This program when approved by the Commission established the purpose of each shot, the num-

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ber of shots, method of detonation, and the expected yield." W-4 apparently refers to (c):

"The transmittal and accompanying recommendation of the Director of the Division of Military Application to the Atomic Energy Commission."

It reads as follows:

"Originator: Director, Division of Military Application

"Recipient: AEC Commissioners

"Date: September 25, 1951

"This report AEC 446/16 contains the Division of Military Application Director's recommendations that the Commissioners approve the expenditure of the required nuclear material for the test series and approve dispatch of appropriate correspondence to obtain Presidential approval of the number of shots and expenditure of material. It is classified Top Secret."

W-6 refers to (e), which reads,

"The report of the Atomic Energy Commission to [229] the Special Committee on Atomic Energy of the National Security Council."

It reads:

"Originator: Gordon Dean, Chairman, Atomic Energy Commission

"Recipient: James S. Lay, Executive Secretary, National Security Council

"Date: October 2, 1951

"This Top Secret memorandum outlined in broad terms the objectives of the test series and requested authority for firing the specific number of shots

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composing the test and to expend certain amounts of fissionable materials.

“This memorandum upon approval by the President established the number of nuclear shots to be fired at the Nevada Test Site during the period October 15, 1951, to about December 3, 1951, and the amounts of materials which could be expended.”

Mr. Brett: W-7 refers to (g), which reads

“The President’s authorization”

It reads:

“Originator: James S. Lay, Jr., Executive Secretary, NSC

“Recipients: The Secretary of State, the Secretary of Defense, and the Chairman, AEC [230]

“Date: October 9, 1951

“This Top Secret Memorandum forwards to the recipients Presidential approval of the specific number of shots to be fired in the period October 15, 1951, to about December 3, 1951, and approves the expenditure of specified amounts of material.

“It limits the number of shots to be fired and the amounts of materials to be expended.”

Mr. Brett: W-8 is in reply to (h), which reads

“The authorization and direction of the Atomic Energy Commission to Test Manager.”

It reads as follows:

“Originator: M. W. Boyer, General Manager, AEC

“Recipient: Carroll L. Tyler, Manager, SFO,” which apparently refers to Santa Fe Operations Office,

(Deposition of Brig. Gen. Kenneth E. Fields.)

“Date: September 20, 1951,” apparently prior to these other documents.

“This secret memorandum designated Tyler as the responsible officer of the AEC for the conduct of the Atomic test operation during the period October 15, 1951, to about December 3, 1951, and vested in Tyler over-all responsibility for the operation and stated this responsibility could not be redelegated.

“Tyler’s responsibilities under the above authority included, but were not limited to; the security of the [231] test operation; radiological safety, both operational and public in the local area; public information; obtaining military support and the conduct of observer programs.”

Mr. Brett: W-9 referred to (h), which reads,

“The authorization and direction of the Atomic Energy Commission to the Test Manager.”

It reads:

“Originator: M. W. Boyer, General Manager, AEC

“Recipient: Carroll L. Tyler, Manager, SFO

“Date: October 12, 1951.

“This Secret Teletype gave the Test Commander (Tyler) overriding operational authority for the purpose of making minor changes necessitated by operational conditions.”

And W-10 is in reference to question (i):

“The directions and instructions of the Test Manager.”

(Deposition of Brig. Gen. Kenneth E. Fields.)

It reads:

“Originator: Alvin C. Graves, LASL

“Date: August 25, 1951

“Recipients: Various Components of the Test Organization

“This secret document set forth the mission of the Test Organization and its various components, specified [232] communication channels, outlined administrative methods to be followed and established the sequence of firing the test devices, and the approximate date and time of firing. The Annexes thereto outlined the specific procedures for firing each shot and provided a detailed schedule of functions to be performed during specified periods prior to, and following each shot, including ground level monitoring of radio-activity up to a radius of some 200 miles from the test site.”

Mr. Weisz:

“Q. Four. State whether or not the authorization of the President for the conducting of the test series of nuclear explosions at the Nevada Proving Grounds during October and November of 1951, included: (a) a statement of the general purpose of the experiment?

A. No.

Q. (b) The number of detonations which were to be made? A. Yes.

Q. (c) The approximate date when the experiments were to begin? A. Yes.

Q. (d) The approximate amount of fissionable material to be consumed? [233] A. Yes.

(Deposition of Brig. Gen. Kenneth E. Fields.)

Q. (e) The estimated explosive force to be released? A. No.

Q. (f) The characteristics of the device or devices to be tested? A. No.

Q. (g) The conditions under which the detonations were to be made? A. No.

Q. Five. Is it true during October and November of 1951 there was no prescription by authority above the Test Manager of general conditions which were to govern such detonations?

A. As I have said in answer to previous questions, the general conditions were considered in the various reviews and approval given at levels above the Test Manager both with respect to the selection of Nevada as the test site and in the review of the specifics of the proposed program of tests for this test series.

In those considerations there is involved the review of the types of devices proposed and approved, the manner of detonation, and such"——

Mr. Brett: Originally it reads, "and such factors which bear on all the other general conditions under which detonation [234] at Nevada will be held."

As amended, without any statement other than the initials of the reporter, it reads:

"and such other factors which bear on the general conditions under which detonation at Nevada will be held.

"Q. Six. Was there any discretionary authority vested in the Test Manager to deviate from, change

(Deposition of Brig. Gen. Kenneth E. Fields.)

or modify the specified matters contained in the President's authorization? A. No.

Q. Seven. If you have answered Question 6 affirmatively, detail such discretionary authority.

A. I answered it negatively.

Q. Eight. Was there any discretionary authority vested in any agent of the United States having lesser authority than the Test Manager to deviate from, change or modify the specified matters contained in the President's authorization?

A. No.

Q. Nine. If you have answered affirmatively, state in whom such discretionary authority was vested and detail such discretionary authority.

A. I answer in the negative.

Q. Ten. Did the Test Manager or any other agent [235] of the United States having lesser authority and who actually participated in the nuclear detonation tests at the Nevada Proving Ground during October and November of 1951 have any different or greater discretion in performing such experiments pursuant to the terms of the President's authorization than that of an Army truck driver who was ordered to deliver material from one point to another and whose orders included: (a) the location of the destination; (b) the designation of the conveyance to be used; (c) the designation of the material to be transported; (d) the route to be followed; (e) the speed limits to be observed and (f) approximate time when the service was to be performed?

(Deposition of Brig. Gen. Kenneth E. Fields.)

A. Insofar as the specifics of the approvals by the President and the Commission are concerned, the Test Manager had no authority to deviate therefrom.

I don't consider myself competent to say that the Test Manager is or is not analogous legally to an Army truck driver although I have never considered that the Test Manager could be construed to be a truck driver in that sense.

Q. Eleven. If you have answered Question 10 affirmatively, state what additional different discretionary rights they had and in whom such [236] discretionary rights were vested."

Mr. Brett: Now, again there is a correction, and I will read it both ways:

"A. I am a little lost how to answer that question. I am not sure my answer is affirmative, or positive." And it was corrected to read:

"I am a little lost how to answer that question. I am not sure my answer is completely affirmative, or negative."

"Q. Twelve. Is it true that the experiments conducted between October 22, 1951, and November 5, 1951, consisted, in part, of detonating weapons containing fissionable and radio-active materials with the intent and purpose of creating and causing blast waves and air shock waves which would reach into and bounce or rebound from atmospheric layer elevations which surround the earth and which are defined as (1) the Troposphere, an air mass layer within the area from the earth's surface to an ele-

(Deposition of Brig. Gen. Kenneth E. Fields.)

vation of six miles; (2) the Ozonosphere, an air mass layer between 25 and 40 miles above the earth's surface and (3) the Ionosphere, an air mass layer 50 or more miles above the earth? A. No.

Q. Thirteen. If your answer is in the [237] negative what was the intent and purpose of such experiments?

A. The purpose of the experiments conducted between October 22, 1951, and November 5, 1951, was twofold: Some tests were conducted for research and development purposes to secure information needed for the design of new and improved weapons; others were conducted to secure information on the effects of atomic explosions on instrumented structures and equipment within the Nevada Proving Grounds.

None of the tests had as their purpose the creation of shock waves which would rebound from the atmosphere.

Q. Fourteen. Is it true that the United States, through previous experiments made by the Atomic Energy Commission, knew that these shock waves which it intended to create through such explosions were capable of extreme, erratic and uncontrollable destruction and property damage for hundreds of miles; that similar, though not necessarily the same intensity of, explosive tests had caused widespread damage for which it had assumed liability in reports to Congress and for which Congress had appropriated funds for payment?

(Deposition of Brig. Gen. Kenneth E. Fields.)

A. As I answered in Question 13, the purpose of those experiments or their intent was not to create shock waves, but rather that of research and development.

However, from previous tests the Commission knew [238] that the possibility existed that a test explosion might cause some minor blast damage outside the limits of the Nevada Proving Ground. The Commission has in the past made administrative settlement, under authority contained in the Federal Tort Claim Act, of a number of property damage claims not in excess of \$1,000.

I would not characterize the test explosions, however, as being capable of 'widespread damage' and 'extreme erratic and uncontrollable destruction and property damage for hundreds of miles.'

Q. Fifteen. If your answer is in the negative what was the intent and purpose of such experiments?

A. I think I have already answered that in answer to Question 13.

Generally, the purpose was that of research and development aimed toward the design of new and improved weapons and securing of effects" and the word "and" is stricken out,

—"information on the specific structures and equipment within the Nevada Proving Ground.

Q. Sixteen. Is it true that the United States through the Atomic Energy Commission conducted such experiments and detonated such extremely high explosives for the deliberate purpose of determining

(Deposition of Brig. Gen. Kenneth E. Fields.)

how far, to what extent, and in what manner damage [239] and destruction would be caused thereby?

A. No, it is not.

Q. Seventeen. If your answer is in the negative what was the intent and purpose of such experiments?

A. Well, again, it is the same answer as 13.

I would like to emphasize,"

It says "that, however," and it has been changed to "however, that weapons effects tests are designed to secure information pertaining to the effects on specific structures and equipment within the test site and close to the point of detonation, but never to cause property damage outside the test site or to test the effects of those devices outside the test site.

"Q. Eighteen. It is reported in the Commission's official report dated January, 1953, and entitled, 'Assuring Public Safety in Continental Weapons Tests' at Page 88, in Footnote 4, that 353 claim for cracked plaster inside or cracked stucco outside of private properties were filed with the AEC and approved and paid by it under the Tort Claims Act and that such claims resulted from the nuclear test detonations made at the Nevada Proving Grounds during January-February, 1951, and during October-November, 1951.

Were such claims and payment thereof [240] reported to the Congress in writing?

A. Yes.

Q. Nineteen. If you have answered affirmatively annex a true copy of such report or reports; mark

(Deposition of Brig. Gen. Kenneth E. Fields.)

them with the initial W and the next consecutive number and the Notary will mark them with the next consecutive number as an exhibit.”

Mr. Brett: The deposition then shows this language:

“Thereupon, document headed W-11 was marked Exhibit No. 11 for identification, consisting of 16 sheets.”

It is very long, Judge. It consists of large number of claims, and we offer that exhibit as Plaintiff's Exhibit No. 38, I believe it is, our next number in evidence. It consists of a report to Congress and a list of claims paid.

The Court: It will be received.

(Said documents were received in evidence as Plaintiff's Exhibit No. 38.)

Mr. Weisz:

“Q. Twenty. In performing your duties as Deputy General Manager of AEC”——

And for the purpose of clarification, your Honor, we originally were taking this deposition, as I think counsel stated, of the Deputy General Manager. I am sorry. He has left the Commission and we then engaged in another stipulation [241] for the deposition of General Fields as a substitute, but the interrogatories weren't changed, it becomes quite clear.

“In performing your duties as Deputy General Manager of AEC, have you been informed of the contents of all reports of the Commission to the

(Deposition of Brig. Gen. Kenneth E. Fields.)

Congress of claims made against it for damages claimed to have arisen out of its testing of nuclear weapons at the Nevada Proving Grounds made between January of 1951 and this date?"

Now, I will read the reply of General Fields:

"A. As I have testified previously, I am not Deputy General Manager but the Director of Military Application. In this position I am generally aware of the claims for damages arising out of the testing operations at the Nevada Proving Grounds.

Q. Twenty-one. Aside from the claim out of which this lawsuit arises and in which such defense has been made, do you know of any instance in which AEC rejected and disallowed a claim for damages under the Tort Claims Act arising from the nuclear detonation test at the Nevada Proving Ground upon the ground that the United States through its agents was exercising a discretionary function or duty?

A. In exercising its authority to make administrative settlement of claims not in excess of [242] \$1,000, the Atomic Energy Commission has not to my knowledge rejected a claim"—

Mr. Brett: It originally read "attesting," but the reporter says it is error and it was corrected to read,

"for test damage upon the grounds that the United States through its agent was exercising or performing a discretionary function or duty.

"Q. Twenty-two. If your answer is in the affir-

(Deposition of Brig. Gen. Kenneth E. Fields.)

mative briefly state the nature of the claim, the name of the claimant and the defenses asserted.

A. My answer was in the negative.

Q. Twenty-three. Limiting your reply to the exercise or performance of discretionary functions or duties, was there any difference between the tests made at the Nevada Proving Ground on any or either of the following dates: October 21, 28, and 30, 1951; November 1, 5, 19, and 29, 1951?

A. No.

Q. Twenty-four. If you have answered Question 23 affirmatively state and describe such differences.

A. Well, I answered it negatively."

Mr. Weisz: No further questions were asked.

We would like now to turn to the deposition of Dr. Everett Cox. [243]

Mr. Brett: May I at this time, again direct the clerk's attention, that this last exhibit annexed to those documents, which is W-11 is the one that was received in evidence as Exhibit 38?

(The deposition of Dr. Everett Cox, a witness on behalf of the defendant, was read by counsel for the parties as follows:)

DEPOSITION OF DR. EVERETT COX

Mr. Weisz: Direct examination by myself:

"Q. Would you state your full name, please?

A. Everett Franklin Cox.

Q. And your address, please?

A. Home address?

(Deposition of Dr. Everett Cox.)

Q. Well, whichever one is fitting at the moment.

A. 810 Hermosa Drive, Northeast, Albuquerque, New Mexico."

The Court: Excuse me, for a minute. Is this about as long as the last one?

Mr. Brett: Yes, it is, your Honor.

Mr. Weisz: This is a much longer one, your Honor.

Mr. Brett: I think it is longer than that other one.

Mr. Weisz: It is 60 pages. And we have another one, besides.

Mr. Brett: And I will have a little rebuttal to one of them, Mr. Bruner's testimony.

The Court: Suppose we continue to about five minutes [244] of 4:00 and then we will recess until morning.

Mr. Weisz:

"Q. And where are you employed, now?

A. By the Sandia Corporation, also at Albuquerque.

Q. And can you tell us very briefly what the Sandia Corporation is and does?

A. The Sandia Corporation is an ordnance laboratory and development organization for the Atomic Energy Commission.

Q. In other words, is it a scientific group working on nuclear weapons?

A. Essentially correct.

Q. And what is your position with the Sandia Corporation, please?

A. I am a Department Manager within the research organization; my particular department is called the Weapons Effects Department.

Q. And in what particular field of science do you work, sir?

A. Essentially all the fields related to weapons effects, although my personal specialty has been mostly in the field of blast. Whether it is called blast or acoustics is a matter of degree.

Q. And where were you educated, Dr. Cox?

A. My Bachelors Degree with a major in [245] physics was at Miami University at Oxford, Ohio. My Doctorate in Philosophy with a major in Physics and Math is from California Institute of Technology at Pasadena.

Q. And when did you receive your doctorate, Dr. Cox?

A. 1933.

Q. And can you give us briefly your professional experience since then?

A. Associate Professor of Physics at Colgate University, that was 1933 to 1939; then Assistant Director of the Buhl Planetarium, and Institute of Popular Science, Pittsburgh; that was essentially one year; then with the Navy Bureau of Ordnance, in Washington, and Pearl Harbor for two years; then to the Naval Ordnance Laboratory in Washington and Silver Springs, Maryland until 1948, and at Sandia Corporation since that time.

Q. And since when have you specialized, if you have, in the field of blast effects?

(Deposition of Dr. Everett Cox.)

A. My first experience with that, I believe, was October of 1946.

Q. And have you been working in the field since 1946?

A. Periodically, not continuously in that one field, but it certainly has been of interest to me since that time and I have published several [246] articles in the intervening time.

Q. Do you belong to any professional associations?

A. Several.

Q. What are they, please?

A. At the present time, the American Physical Society of which I am a Fellow, and the American Meteorological Society, of which I am a professional member.

Q. And you state you have published articles in the field of blast effects?

A. Right, in—oh, quite a number of different journals.

Q. Which journals?

A. The Acoustical Society of America; Bulletin of the American Meteorological Society, and the Journal of the American Meteorological Society; American Journal of Physics; Scientific American.

Q. That was a paid article, I presume?

A. Yes. And a chapter in a fifty-nine volume encyclopedia, Handbuch der Physik.

Q. This Handbuch der Physik is a German publication, which is what?

A. The Handbuch der Physik is a relatively old encyclopedia of Physics and they are now re-doing

(Deposition of Dr. Everett Cox.)

the thing from beginning to end; I believe it is fifty-eight or fifty-nine volumes. [247]

“By Mr. Brett: This simply means a Handbook of Physics, does it?”

A. Except to distinguish it from the engineering term, the translation is ‘Encyclopedia of Physics.’

Q. Now, the field in which you worked, this blast effect, you called it, is that a relatively new one?

A. No. Whenever there has been an accidental explosion, going back to whenever TNT was first invented or before, there has been scientific curiosity with what has occurred; but as far as making a scientific study, it’s been a relatively active field only since 1900.

Q. Prior to 1900 it was merely a matter of phenomenology, I suppose?

A. Largely phenomenology.

Q. What type of phenomena were observed?

A. Oh, sounds going only in one direction, or predominantly in one direction; or skipping over an area, then striking some place further out, phenomena of that nature.”

The Court: We will recess until 9:45 tomorrow morning.

(Whereupon a recess was taken until the following day, Thursday, May 12, 1955, at 9:45 a. m.) [248]

Thursday, May 12, 1955—9:45 A.M.

The Clerk: No. 14,795-WB Civil, Bartholomae Corporation versus the United States for further trial.

Mr. Brett: Ready, your Honor. Before we proceed with the deposition, I would like to ask, if I may, that you would set aside our submission of my case in chief, for the single purpose of permitting me to offer in evidence this map of Nevada, as Plaintiff's Exhibit No. 1. I find that I overlooked doing that. I would like to have that received in evidence.

The Court: Very well. That will be received in evidence.

Mr. Brett: Thank you.

The Clerk: It is marked as Exhibit No. 1.

The Court: All right. It will be received as No. 1.

(Said map was received into evidence as Plaintiff's Exhibit No. 1.)

Mr. Weisz: May we continue the reading of the deposition, your Honor?

The Court: Yes.

Mr. Brett: May I have the original, please, Mr. Clerk. It is the Cox deposition.

Mr. Weisz: Page 5, line 24.

Mr. Brett: Page 5, line 24, that is right. [251]

Mr. Weisz: I will start one question back to get the continuity. Line 20, page 5:

(Further reading of the deposition of Dr. Everett Cox, a defendant's witness, was continued by counsel for the parties as follows:)

DEPOSITION OF DR. EVERETT COX

(Continued)

“Q. What type of phenomena were observed?

A. Oh, sounds going only in one direction, or predominantly in one direction; or skipping over an area, then striking some place further out; phenomena of that nature.

Q. And these have been observed in the past but there had not been any research as to the cause or effect?

A. Generally not.

Q. And in this field in which you are engaged now a popular one; are there many men in the field today?

A. No. I would guess there are possibly six or eight people that have very much real interest in the field.

Q. Was it a practical field prior to the present time?

A. Only to the extent that proving grounds for Army and Navy weapons, such as Aberdeen Proving Ground [252] and the Dahlgren Proving Ground, have had a few experiences with blast claims from out-of-the-way places, and so they have had a bit of curiosity as to what brought on the damage at those places.

Q. Now, in your work, where do you fit in, then, in your field, with regard to the atomic testing that goes on in Nevada; what are your duties?

A. Have you, as yet, had explained the Test organization?

Q. No.

A. In the Test Manager's organization, starting

(Deposition of Dr. Everett Cox.)

with at least the second series of nuclear shots, (I was not present on the first series of shots) they have had me as the specialist in blasts.

Q. Now, when was the second series?

A. That was the October-November series of 1951.

Q. And in your function there, what do you actually do?

A. My job is to predict, as best I can, from the weather forecast, whether damaging blasts will strike any inhabited localities; and then, in addition, for the blast that cannot be computed from known weather information, to attempt to predict by use of high explosives what the blast pressures will be at great distances. [253]

Q. Now, let's go back for a moment, to actually what happens—what causes a blast effect; or what is blast effect, can you tell us that?

A. Well, very near an explosion of any sort, whether it be nuclear or TNT, or any kind of explosion, the blast wave tries to start out spherically; but if the explosion is on the ground or on a relatively low tower, or even an air burst, the part of the blast that strikes the ground is reflected. If you have a tower, the blast wave is first expanding spherically. When it strikes the ground you have a second part of a spherical front starting from the mirror image of the shot point below the ground."

Mr. Weisz: Then there is an observation by Mr. Brett:

"Mr. Weisz, I think, in view of the nature of this

(Deposition of Dr. Everett Cox.)

testimony, we would be fairer to the doctor, and all concerned, if he signs this. He is talking about something the rest of us know very little about. I would like to have it signed."

Mr. Brett: That is right.

Mr. Weisz (Continuing):

"Q. Now, we were at the point at which we have most of our initial sphere which emanates from the explosive point proceeding outward, and another part of it which has been reflected from the [254] ground.

A. Yes, and the two of them essentially join together to become a large hemisphere. If the atmosphere were perfectly uniform, no change in temperature or winds, then the hemisphere would proceed to get larger, larger, larger and the concentration of blast energy would go down essentially as the square of the distance; twice as far away, one-fourth as great energy concentration; three times as far away, one-ninth, and so forth. Now, if the atmosphere is not uniform in temperature and has winds, then the energy becomes concentrated in certain areas on this sphere; part of the energy that belongs on one side ends up on the other side. It is my job to use the weather data that we have and attempt to predict how much this concentration will be, and whether it will come back down and strike the ground.

Q. Then, from your last statement, am I correct in stating that we can have reflection of these blast

(Deposition of Dr. Everett Cox.)

waves back to the ground after they have risen up towards the atmosphere?"

Mr. Brett: In the corrected original, Mr. Weisz, it says "up in the atmosphere."

Mr. Weisz (Continuing):

"A. Bending is a more proper term than [255] reflection. They are bent down to the ground rather than reflected down. It's a gradual curvature rather than a bump and return.

Q. Now, these waves which produce the blast effect, what sort of waves are they? Are they sound waves or what?

A. There's a very tiny difference between what is called a blast wave and a sound wave. It's simply a matter of degree. A shock wave ordinarily has significant pressure, and a sound wave has insignificant pressure, and there is no very clear-cut boundary between significance and insignificance. If a pressure of two or three pounds is present per square inch, we invariably call that a shock wave; if a pressure of 1/1000 or 1/10,000 of a pound per square inch is present, we refer to that as a sound wave.

Q. But the waves are essentially similar?

A. Very similar. The shock wave usually contains one compression or over-pressure, and one rarefaction; an acoustic wave usually contains many.

Q. Dr. Cox, at what point is there this bending of those waves that you have mentioned in the atmosphere? [256]

A. Well, it takes place only as a result of a non-uniform atmosphere, so where the bending occurs

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depends on the temperature and wind structure of the atmosphere. The bending starts essentially immediately at the source and continues from then on, depending on the temperature and wind structure of the atmosphere.

Q. Do we ever have a uniform atmosphere?

A. Small sections of it might be regarded as uniform, but only very small sections.

Q. In other words, in the normal course of events, with regard to all types of waves, including sound waves, there is this bending that takes place?

A. Right.

Q. Are there points in the atmosphere at which more bending takes place than at others?

A. Yes, and here again, this depends entirely on the particular atmospheric structure. A typical atmosphere gets colder as you go up in altitude. However, in the desert country, particularly in the early morning, it is frequently warmer one or two thousand feet above the ground than it is down on the ground, so that causes considerable bending and returning of the waves, sound waves, to earth; then [257] the atmosphere proceeds to get colder with altitude until we reach what is called the tropopause six to eight miles above the ground; then we have essentially uniform temperature up to about twenty miles and then it starts to get warm again. It comes up to about ground temperature at thirty-five miles altitude; then it drops off again to about sixty to eighty degrees below zero centigrade; then it warms up again up to a hundred miles, so there

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are those layers that give us particular bending to sound.

Q. Can we say, Dr. Cox, that when the waves, the sound or blast waves, hit the first layer you mentioned at one or two thousand feet, that the other waves will not go through, that some will not go through or out, will they work out?"

Mr. Brett: Mr. Weisz, in this original text the question reads as follows. Since you don't have it that way, with the court's permission, I will read it. Part of it is stricken out:

"Q. Can we say, Dr. Cox, that when the waves, the sound or blast waves, hit the first layer you mentioned at one or two thousand feet, that some will not go through or out? Will they work out?" And I am now reading Dr. Cox's answer:

"A. Depending on the temperature of that [258] layer compared with the temperature at the ground, a very small fraction of the energy that would normally proceed directly out is bent down; in a typical case, it would hold perhaps one-tenth of the energy at the low levels——

Q. At the low levels only one-tenth of the energy——

A. ——would be held in a typical case; the other nine-tenths would escape and go up.

Q. It is not held; it is reflected?

A. It is bent down and strikes the ground; and then it is reflected and then bent down again, and it is thus held in this low level.

Q. Just for clarity, Dr. Cox, would you draw

(Deposition of Dr. Everett Cox.)

us graphically, what happens on that? Is that capable of graphic representation?"

Mr. Brett: Pardon my delay, your Honor. In the text of the original deposition, on line 16, it states: "Graph drawn by witness," but there is no graph annexed to it.

Do you have such a graph?

Mr. Weisz: No. What happened there, counsel may recall, we got a better representation in printed matter that Dr. Cox sent us.

Mr. Brett: I merely make that statement so that your Honor will understand that there is no such graph annexed here. [259]

Mr. Weisz (Reading):

"Q. Dr. Cox, you have drawn for us two representations, and you have now handed me a printed matter consisting of some pages, ninety-five through a hundred and three; it states on its face that it is reprinted from the Bulletin of the American Meteorological Society, Vol. 35, No. 3, March, 1954, pp. 95-103, in which figure one and figure two, which appear on pages 97 and 98, are the graphic representations that you have drawn just heretofore in a slightly more refined form. I will offer that document as Defendant's B for identification."

And it was so marked.

Mr. Brett: I had failed to recall that, Mr. Weisz.

That is not the doctor's answer. And I see that there is such a document annexed to the deposition, marked Exhibit B.

(Deposition of Dr. Everett Cox.)

Mr. Weisz (Reading):

“Q. Now, Dr. Cox, on the refraction of the type that we have just been discussing at the one and two thousand feet altitude, is there a loss of the energy contained in these waves in the traveling?

A. There is some loss due to absorption of energy in the air, and there is considerable loss from the multitude of reflections. Those are the only losses in energy; but the concentration [260] of energy, which is the thing that might do damage, contracts directly with distance; the concentration is reduced directly with distance—twice as far away, one-half the concentration of energy, and so on.

Q. And can you calculate, knowing the yield, the relation of energy to be expected from any type of detonation? What would be the maximum energy at any time along this reflected pattern?”

Mr. Brett: And then I asked:

“You mean accurately or an estimate?

“The Witness: I can calculate it on the assumption that the data that I have is up to the minute data.”

Mr. Brett: Pardon me, counsel. I did not properly interpret a writing that is on here. Apparently it was merely placing letters in their proper place, so the answer was as follows, your Honor:

“I can calculate it on the assumption that the weather data that I have is up to the minute data.”

Mr. Weisz (Reading):

“Q. And how close can you calculate? How

(Deposition of Dr. Everett Cox.)

close have you been able to check your calculations prior"——

Then there is an interjection by Mr. Brett: [261]

"I will have to object. As yet there has been no foundation laid for that, and I think that calls for a conclusion of the witness."

Whereupon I continued:

"Q. Now, Dr. Cox, you state that you have been involved on the blast effect in the Atomic test series since October of 1951; is that correct, sir?

A. Actually, since about August of that year when we started preliminary experiments.

Q. And have you been engaged in the atomic testing since August of 1951?

A. All of those here in Nevada, yes.

Q. Can you tell us about how many such demonstrations have taken place?"

Mr. Brett: Now, at this time I am going to ask the court to take note that the deposition was taken the 12th of February, 1955. I am now reading Dr. Cox's answer:

"A. Twenty-six, I believe.

Q. Now, has it been your duty, or function, in each of these twenty-six to, prior to blasts, predict blast pressures as they emanate from the source?

A. To sections off of the test site, yes.

Q. Then you do predict, prior to blasts, what the blast effect will be at various points?

A. Yes, I attempt to predict what the blast [262] pressures will be.

Q. And during these series, have you had instru-

(Deposition of Dr. Everett Cox.)

ments to determine what the blast pressures actually are after the demonstration has taken place, at these various points?

A. During each of the series, I have had a finite number of instruments to so determine.

Q. And have your predictions been borne out by the instruments you use?

A. I actually give several predictions. I give a prediction from the weather prediction, and if the weather prediction has been bad, then my prediction, based on the weather prediction, is nothing to brag about. Then I give another prediction based upon a weather balloon sounding; now, depending again on the time of the release of that balloon, and assuming that the weather stays exactly the same between the time the balloon sounding is made and our shot, my prediction is good or bad; when the weather has stayed the same my predictions are good; when the weather is changing rapidly I sometimes get fouled up by, oh—perhaps a factor of two or sometimes a factor of three.

Q. What do you mean by 'factor of two'?

A. If I have predicted a certain pressure [263] level, we will miss that pressure level; the actual pressure may be twice as large or one-half as large, a factor of two.

Q. Now, therefore, your predictions, or the accuracy of your predictions, are dependent upon the weather information that you have and the consistency of the weather between the time you get

(Deposition of Dr. Everett Cox.)

the information and the time the shot or detonation takes place, is that right?

A. That is right.

Q. Are you able to tell when the weather has changed other than by the fact that your prediction is not borne out?

A. I think we should introduce here a set of experiments that we perform immediately before the nuclear shot. At the time of the particular series in October and November of 1951, we fired"—

Mr. Brett: And then I interrupted, and I stated:

"Just a minute. I think that the other question can be answered first 'yes' or 'no.' "

The question previously stated was read by the reporter, and I am now reading Dr. Cox's reply:

"A. That depends entirely on the number and frequency of weather balloon flights."

Mr. Brett: Now, I think we might make that clear and [264] read the question again back on page 14.

Mr. Weisz (Reading):

"Q. Are you able to tell when the weather has changed other than by the fact that your prediction is not borne out?"

Mr. Brett: And the answer is:

"That depends entirely on the number and frequency of weather balloon flights.

Q. Have you had sufficient information in the past so that you can tell that your predictions are accurate within at least a certain degree if the

(Deposition of Dr. Everett Cox.)

weather conditions are as you had expected them to be when making the prediction?

A. In most instances, yes.

Q. Now, how great a degree of accuracy do you have?"

Mr. Brett: I objected, if the court please:

"Is this based upon the same statement you made a minute ago? This is ambiguous in that your previous question was laid upon the foundation that the weather would remain constant."

Mr. Weisz said, "Right."

And I said, "Now, if that is the purport of this question, he would have to answer one way or the other"——

Mr. Weisz (Reading): [265]

"Q. Now, assume that the weather is constant such that your prediction is on the actual fact at the time the shot is detonated. How accurate is your prediction upon these low level refractive phenomena?

A. In general, better than twenty-five per cent. In general, my error is less than twenty-five per cent.

Q. Now, can you tell us, with regard to the low level refraction, at what point the blast effect reaches a point at which no damage to property will occur?"

Mr. Brett: At that time I made this objection:

"Again I will have to object on the ground that there has been no foundation laid for the witness to answer that, and that also it is too general and

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ambiguous; it might refer to a number of things.”

Mr. Weisz (Reading):

“Q. Dr. Cox, can you tell from your background and experience what types of property are most sensitive to blast effect—blast pressures?

A. To the best of my knowledge, the large plate glass show windows, such as those in Las Vegas, are the most sensitive of the structures.

Q. They will react to the blast pressures more in your opinion, than any other type of [266] structure or structural member?

A. To the best of my knowledge.”

Mr. Brett: I then made this statement:

“I still would object. I don’t think you have shown a foundation where he would have the basis to form that conclusion. I don’t think that is in his line of work as you have given it as yet. There has been no proper foundation laid for that answer.”

Mr. Weisz: And I continue:

“Q. We will leave the answer, but I will lay a little more foundation so we have the record straight.

Is it your duty, Dr. Cox, to advise the test manager with regard to blast effect?

A. Insofar as I am able.

Q. And in so doing, what do you actually advise him—what the blast pressures are and the effect of the blast pressures at various points?

A. Since the test director is a scientist, I generally advise him the magnitude of the blast pressures.

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Q. In what units or terms?

A. In the terms of the meteorologist in that we measure pressures in units called the bar; the bar is one atmosphere, and a milli-bar is $1/1000$ [267] of an atmosphere, so I generally express the pressure in terms of so many milli-bars.

Q. Is it within the province of your duties to determine how many milli-bars or bars will produce deleterious effects on structures such as plate glass windows?

A. This has been incidental to my duties. Where I have had measuring equipment nearby to structures that have obtained damage, I have, of course, noted what the pressure levels were, and what the evident damage was.

Q. And has it been your experience that the plate glass windows which you have mentioned will be damaged at a pressure which is less, measured in the terms of milli-bars, than other types of construction parts?

A. That is simply my belief. I have not visited sites of all the claims.

Q. You have visited a number, have you?

A. I have visited the site of the Sears and Roebuck Store, and other places where plate glass windows have been damaged.

Q. Have you visited places where other types of structures have been damaged?

A. Not off the test site. [268]

Q. And on the proving ground have you had the

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opportunity to observe the effect of various pressures on structures? A. I have.

Q. And on the basis of that experience, have you found that glass, in particular plate glass, will be damaged at a lower pressure, measured in millibars, than other types of structures?

A. I don't recall any plate glass windows in the structures I have looked at other than structures in Las Vegas. I don't recall any plate glass windows at the test site.

Q. Have you had the opportunity to observe that at a certain pressure a plate glass window will be damaged, whereas other structures, structural members, will not be?

A. No. I have seen the windows in several of the stores in Las Vegas when they have been damaged. I have not visited residences of other claimants on those same dates.

Q. In your opinion, based upon your knowledge of physics and your knowledge of blast effects, is a plate glass window a more easily damaged structural piece than other types of structural pieces?

A. From its construction, I would [269] certainly gather that that is the case.

Q. Why is that, Dr. Cox?

A. Plate glass windows — show windows — are strong against forces from the outside of the store. They are very, very weak from forces on the inside of the store. A very thin phosphorous bronze strip holds these windows in place from the outside; and since these sound waves contain both compressions

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and rarefactions, they appear to suck the windows out with a very low pressure.

Q. None of the windows that you have seen have been pushed inward, then?

A. None of these large plate glass windows.

Q. And it has come to your attention, then, that plate glass windows are damaged through these low pressures, whereas there has been nothing brought to your attention where other damage has been concerned by that type of pressure?"

Mr. Brett: The deposition contains a correction, striking the word "concerned" and having it read "caused by that type of pressure."

"A. That is right.

Q. Can you tell us, then, at what pressure these plate glass windows will be damaged?

A. Yes, from measurements made here in Las Vegas [270] on a date when damage was done to store windows, the peak overpressure was 1.5 millibars; that is equivalent to essentially three pounds per square foot.

Q. Now, Las Vegas is at approximately what distance from the site?

A. Approximately seventy-five miles. Damage didn't occur, however, as a result of one of these low level inversions; it was a low level signal, but it was a focusing case rather than a straight decay of pressure with distance."

Mr. Brett: Just a moment, Mr. Weisz.

I move at this time, if your Honor please, to strike the statement, beginning with the words

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“Damage didn’t occur,” as not responsive to the question.

The Court: It may go out.

Mr. Weisz (Reading):

“Q. In other words, do I understand from that, that aside from the usual refraction we have mentioned previously, whereby the waves are bent and bounce up and down, that there can occur a focusing of these waves in one spot?

A. That’s it; it’s also illustrated in this same article.

Q. So we can have it before us, can you [271] tells us where in the article?

A. Figure 4 in the article shows two clear-cut examples of such type focusing.

Q. Then this 1.5 millibar reading, peak reading, I think you called it, was produced by a focusing of the blasts’ sound waves onto one area, which presumably was Las Vegas?

A. On that particular date, as I recall, the blast struck one-third of the distance to Las Vegas, and then struck again at two-thirds, and then struck Las Vegas; in other words, there was a focus one-third of the distance, then another focus at two-thirds of the distance, and the third time it struck here. There may have been only two bounces on that date, I do not recall exactly.

Q. Now, with regard to the low level refraction pattern, including a focus phenomenon which might occur, presumably, can you tell us what the maximum reading or pressure would be at a distance of

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a hundred fifty miles away from the test site?"

Mr. Brett: I stated an objection:

"By Mr. Brett: I object to that on the ground that there has been no foundation laid; the question is incompetent and ambiguous. It does not state whether you are assuming the weather conditions remain [272] the same, what the nature of the weather conditions are; the nature of the terrain. I object to it."

Mr. Weisz (Reading):

"I'll withdraw the question.

Q. Dr. Cox, from your knowledge as a physicist, and as a person working in the field, and working with the nuclear detonations that have taken place, can you tell us what a maximum would be from any particular detonation at a distance of, let's say, a hundred fifty miles from a low level refraction?

A. No. From the weather data taken at the time of the shot, and we do release a weather balloon as soon as possible after the shot is fired, from that weather data I can compute what the pressures probably were, and in view of my past experience and verifications, I will say that it will be very close.

Q. With regard to the fall series, the winter series of 1951, can you do that?

A. From the weather data and the classified information yields of the weapon, I can compute it.

Q. Have you done so? This is on the low level refraction.

A. I have done so for certain directions. I have

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not done so for all directions from the test [273] site.

Q. Would it vary with directions?

A. It does vary with direction, since this graph of velocity versus altitudes depends on wind as well as temperature.

Q. Have you graphed it for a northerly direction? A. I have not.

Q. Have you for an easterly or westerly direction?

A. For the southeast; primarily, because of the lineup of Las Vegas, Henderson and Boulder City.

Q. Can you tell whether or not, under the weather conditions prevailing during that period, whether the pressures will be greater to the north and southeast?"

Mr. Brett: I am sorry, but it appears very clear that there are corrections, your Honor, here that are not on Mr. Weisz' copy, which was the only thing I examined, so if the court will permit me I will read the question as it has been corrected by the witness.

The Court: Very well.

Mr. Brett (Reading):

"Q. Can you tell whether or not, under the weather conditions prevailing during that [274] period, the pressures will be greater to the north than to the southeast?

A. I can tell by recomputation of the data; but the probability is very small because of the prevailing westerly winds."

(Deposition of Dr. Everett Cox.)

Mr. Brett: I move to strike the last part of the statement as not responsive to the question.

Mr. Weisz: This is based upon the doctor's knowledge and it explains his answer.

Mr. Brett: Well, I direct it to the court's attention. Pardon me.

The Court: All right. Go ahead.

Mr. Brett: Pardon me. Just immediately prior to that, the doctor said clearly that he has only made a record of the computations to the south-east, but that he did not do so to the north and the other directions. Then the question is, "Can you tell whether or not, under the weather conditions prevailing during that period, the pressures will be greater to the north than to the southeast?"

Now, he says he can tell by recomputation of the data. He does not state that he has made a recomputation, and I think his voluntary statement about probability is not responsive to the question.

The Court: Denied.

Mr. Weisz (Reading): [275]

"Q. In other words, pressures would be less to the north than to the southeast?

A. Most probably; that is, the low level signals.

Q. Then can you tell us what the blast pressures at a point a hundred fifty miles from the test site would have been at a maximum during this period? That would be the shots of October 22, 28, and 30th, and November 5, 1951.

A. Well, here I have to go into a new lecture in science. At about eighty miles to a hundred fifty

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miles, a new type of sound wave comes down. It is not a sound that is held in the low levels of the atmosphere, that is, the lower six or eight miles. It is part of the energy which escapes from the low levels and reaches a layer called the ozonosphere, located twenty to thirty-five miles above the earth. Now, that layer is nearly the same temperature as the ground, so far as we can learn from rocket measurements and this very acoustical phenomenon we're talking about; and since it has a temperature so near that of the earth, if the temperature happens to be a little warmer, sound comes down at these greater distances; if it's a little colder, the sound doesn't come down. If the wind up there is blowing a little bit to the east, [276] the sound will come to the east and not to the west; and if it's blowing a little to the west and not to the east, then the sound comes down to the west. These we refer to as ozonosphere signals.

Q. Dr. Cox, can you effectively rule out your low level refraction at a distance of a hundred fifty miles?

A. We can for any given direction; and considering the sizes of the nuclear devices that are tested here in general, the low level signal pressures beyond a hundred miles have been very trivial, too trivial to cause any damage.

Q. Can we state that from the fall series of 1951, that a low level refraction could not cause damage at a distance of a hundred fifty miles in any direction?"

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Mr. Brett: At that point I made another objection:

“I don’t believe, as yet, there’s a foundation laid. He said he hasn’t made the checks and tests, and so forth, except for a southeasterly direction.”

Mr. Weisz: I didn’t hear the word “objection.”

Mr. Brett: I think that the whole statement that he made there earlier might be properly described in the language of the late President Roosevelt, who is said to have used it one time, that it was quite “iffy.” I realize the man is an expert [277] and a very devout scientist but, even so, it doesn’t seem to me that he should be permitted to draw a very explicit conclusion of that kind, with the foundation that has been shown.

The Court: Do you make a motion to strike the testimony?

Mr. Brett: I am making objection to the question which he has not yet answered, but he does answer it.

The Court: The objection is overruled.

Mr. Brett: You asked another question in connection with it, Mr. Weisz.

Mr. Weisz: No. That was an answer to your objection. I said, “This is based upon the theory of physics.”

Then he answered.

Mr. Brett: I will show the court the text. Here is the question and the objection (indicating on transcript to the court). It seems to me that Mr. Weisz is adding a question in there.

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The Court: Well, what is your objection now?

Mr. Brett: There is no objection except it seems to me that there is another question being added and then an answer.

The Court: No. As I read that, is a discussion between you and Mr. Weisz.

Mr. Weisz: As I recollect it, your Honor, that was the purpose of the interjection.

Mr. Brett: All right. I will read it, then, in that manner. [278]

“This is based upon the theory of physics.”

And this is the doctor's answer:

“I have not checked it for the northerly direction. The possibility of it being there is very, very tiny.”

Mr. Brett: Now, I move to strike that upon the ground that that is a conclusion of the witness for which there is no foundation.

The Court: The objection is overruled.

Mr. Weisz (Reading):

“Q. You stated, did you not, Dr. Cox, that the northerly direction would have lower blast pressures than the southeast at this particular period, which is the fall of 1951?

“A. Even more generally than that, since we are in a band of prevailing westerlies; the pressure levels east from the site (east, southeast, and northeast) are essentially always larger than those toward the west, southwest and northwest. In other words, essentially from southeast to northeast is the area where we are more likely to concentrate blast because of prevailing westerly winds.

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“Q. Then, can we state that a hundred fifty miles to the southeast the pressures caused by the low level refractions would be too minor to [279] cause damage during the fall of 1951?

A. Not categorically. Because of the focusing situations which have existed in this direction on occasion, I would have to have a particular distance and a particular set of weather data to say for sure that they were not. In other words, when we have a focus, we have a repetition of the focus; the pressure is less on each successive strike by the square of the number of the bounces; on the second bounce the pressure levels are reduced to one-fourth what they were on the first; on the third the pressures are reduced to a ninth.

Q. In terms of your experience and your knowledge, can you state in terms of probabilities what the chances would be of having a significant blast pressure from low level refraction at a distance a hundred fifty miles to the north during the fall series of 1951?”

Mr. Brett: I again renew the objection. I understand the court's ruling will be consistent?

The Court: The objection is overruled.

Mr. Weisz (Reading):

“A. From the experience we have had with all of the shots, the probability is vanishingly small.

Q. Now, Dr. Cox, you have previously mentioned that [280] your problem at that distance generally is from a higher level refraction?

A. Correct.

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Q. That was in what area of the atmosphere?

A. The ozonosphere.

Q. Now, can you tell us what procedures you go through prior to a detonation in order to enable you to predict what the ozonosphere refraction might be?

A. Yes. As you appreciate, we cannot obtain weather data from the band twenty miles to thirty-five miles above the earth. The weather ballons do not go that high, so we are not able to compute mathematically from weather data what would happen as a result of the weather twenty to thirty-five miles above the earth. Starting in August of 1951, we set off at the test site a large number of high explosive shots, in general about one ton of explosive, and we placed instruments at several locations within this relatively wide band from perhaps seventy-five miles minimum to a hundred fifty miles maximum. We measured the pressures that were refracted down to earth from the ozonosphere whenever we fired one of these shots. Then the test series was all ready to begin, we arranged to fire one of these same high explosive shots [281] one hour before each nuclear detonation. We compared the pressure we measured on that date with the statistics we had previously obtained to see whether the pressures were uncommonly low or uncommonly high or middle. And then from scaling laws by which we attempt to predict big stuff from measured small stuff, we would predict for these

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outlying stations what the pressure levels would be from the nuclear shots.

Q. During the periods of experimentation in August of 1951 and during the series of tests that took place in October, November and December of that year, how many such measuring stations did you have?

A. We had all the measurement equipment that was available in the United States at that time. There were eight in number.

Q. And what is this instrument?

A. It is called a microbarograph.

Q. You say that there were eight, and these were the only eight in the United States?

A. So far as we were able to learn.

Q. And these belonged to the Commission?

A. No. These belonged to the Naval Electronics Laboratory at San Diego.

Q. And you borrowed them for the [282] purpose?

A. We borrowed them for that purpose.

Q. Let me understand the procedure that is followed here. You set off a high explosive detonation, one ton, I think you said?

A. Essentially one ton, yes.

Q. And you have the microbarograph somewhere between seventy-five and a hundred fifty miles away?

A. We had some of them in those locations. We were also interested in verifying my low level calculations, so we had quite a number of the eight

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instruments located inside of the seventy-five mile circle.

Q. And then you got the readings from your high explosive shots at these various distances from the place where you detonated the high explosive. Then, as I understand it, you scaled up to determine what pressure might be expected at those various points from a much higher yield from a nuclear detonation? A. That's right.

Q. Have you had the opportunity to verify your scaling? This scaling is a mathematical computation, I presume? A. Right.

Q. Have you verified that scaling computation by [283] the results of the nuclear detonations?

A. We have verified it on many occasions, although at the time of the particular test series we weren't always able to verify. The instrument must be very sensitive in order to get a decent reading from the one-ton shots, and it still must be relatively insensitive to always get the highest reading that comes in from the nuclear shots. These particular instruments didn't have as wide a range as we would have liked. They were quite sufficiently sensitive but weren't sufficiently insensitive to fulfill our requirements.

Q. In other words, your instrument was sensitive enough to give you readings for high explosives, but had too narrow a band, and you couldn't take the higher pressures when the nuclear detonation was set off?

A. It sometimes went off scale. Part of that was due to the narrow band of the instrument, and then

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part of it was due to our inexperience with setting the instrument.

Q. Have you used better instruments thereafter?

A. We have.

Q. And they have verified the scaling formula that [284] you used?

A. To within perhaps twenty-five to fifty per cent error.

Q. You are still using the same scaling formula today that you did in 1951? A. Yes.

Q. Now, you said you set off the high explosive shots one hour prior to the nuclear shot?

A. This was not always absolutely true. Sometimes it was as late as minus one-half hour and sometimes it was as early as minus one and a half hours.

Q. Can you tell us why that particular time period is selected?

A. We need to assume that the weather remains constant between the time of the high explosive shot and the nuclear detonation, so we want the time as short as possible. On the other hand, it does take sound a significant time to reach a hundred thirty-five or a hundred forty miles, and after the sound reaches there and records on the instrument, then the man must telephone or radio back into our station and tell us what reading he obtained; so we can't have it too close in time. If we want to issue any protective notices to the populace that they will experience fairly high pressures, we need time to issue that [285] notice; so we can't have the time

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either too long or too short. One hour seemed reasonable.

Q. When you advise the populace that they are going to experience fairly high pressures, in what terms is that put, do you know?

A. I inform the Director of Test Information and I don't know what form he uses for his announcements.

Q. Now, referring to the high explosive shots that you set off, before the detonations on October 22, 28, and 30th and November 5th of 1951, can you tell us what readings you had at a distance away from the site? Do you have a record of the readings?

A. Yes. And my most comparable distance on that particular series was the station at St. George.

Q. St. George, Utah?

A. Which was essentially a hundred thirty-five miles distant.

Q. And St. George was in which direction?

A. St. George is almost directly east, I believe. It's a trifle north of east.

Q. And do I take it that what you said before holds true, that the probability, due to the direction of the winds, is such that the pressures to the east will be greater than those to the north? [286]

A. Now we're talking of winds up in the region twenty to thirty-five miles above the earth.

Q. That's right.

A. And there is very, very little scientific information on those winds; there's little reason to

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assume that they would not be in the easterly or westerly direction, and we know that they change with seasons, but there is very, very little scientific evidence concerning winds at those altitudes; apparently the winds at those altitudes are blowing more often from west to east in winter and from east to west in summer, but this series was in the fall——

“(By Mr. Brett): Let the record show the doctor throws up his hands.

Q. Then, Dr. Cox, based upon what information is available, is it your opinion that the pressures to the north will at least be, or are likely to be, the same as those to the east?”

Mr. Brett: I then stated an objection:

“I will have to object to that; you’re simply calling for a guess, there’s no basis laid——”

Mr. Weisz: By myself:

“Since it happens to be the best guess in the country, from one of the six men in the country or [287] the world who can give it, I don’t know how we can get it any better.”

Mr. Brett: I will state now, your Honor, assuming that Mr. Weisz’ statement is correct, which appears to be correct from the record, I still don’t believe that that lays a foundation so that the witness should be permitted to guess.

The Court: The objection will be sustained. He himself states it is just a guess.

Mr. Weisz: Oh, yes. The only reason I went forward with the questioning was that, granted that

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it is but a guess, it is the only thing one can have, if you want to go into the area at all.

The Court: I know, but you can't prove a fact by guessing, even though there might not be evidence available. If there isn't evidence available, it can't be proved by guessing, as a substitute for evidence.

Mr. Weisz (Reading):

“Q. Now, can you tell us what the readings were in St. George? Is that where you had the station? A. Right.

Q. For October 22, October 28, October 30th and November 5th, 1951?

A. The values that I have here”——

Mr. Brett: And then there is an inked parenthesis— [288] “(as I said, our instruments were limited in upper range)—the readings I have here are what I would have computed them to be, based upon my preliminary shot.

Q. You don't have the readings on the preliminary shots?

A. I have the readings on the preliminary shots scaled up to what it would be on the nuclear shot.

Q. Based upon that scaling formula, could you tell us what the pressures were that you predicted on those four days at St. George?

A. 0.2 millibars on October 22nd, .03 on October 28th; 0.2 on October 30th, and 0.35 on 5 November. I have them also for Boulder City.

Q. What is the distance of Boulder City?

A. Boulder City is essentially a hundred miles.

(Deposition of Dr. Everett Cox.)

Q. Could you give us the readings for Boulder City on those dates?

A. October 22, 0.02; on October 28th, 0.45; on October 30th, 0.2; and November 5th, 0.09.

Q. These are the pressures scaled up to those that you were predicting for the nuclear detonations that were to take place those days? [289]

A. Right.

Q. And they took into account the yield, the energy to be released by that nuclear detonation?

A. They took into account the energy to be released insofar as the Los Alamos scientists were able to predict what the yield would be.

Q. Do you know whether the predicted yield was borne out in the series during the fall of 1951?

A. None of the actual yields were significantly different—none of the yields were more than ten per cent larger than predicted.

Q. And a difference between prediction and yield of ten per cent, being ten per cent greater yield, what would the effect be when scaled?

A. Three per cent.

Q. The ten per cent would come down to three per cent difference in the millibar readings?

A. Correct.

Q. Doctor Cox, you stated that a 1.5 millibar pressure damaged the windows in Las Vegas at one time, did you not?

A. Right.

Q. That was a peak pressure, was it?

A. That's right.

(Deposition of Dr. Everett Cox.)

Q. Have you recorded lower pressures in Las Vegas [290] at which point the windows were not affected? A. Many times.

Q. Can you tell us at what point the windows will be affected; is it 1.5 or much less, or where would it be?

A. We have recorded one millibar peak pressure here in Las Vegas without damage.

Q. Then somewhere between one and one and a half millibars will produce damage on plate glass windows, that is true, is it not?"

Mr. Brett: Here is an objection which I made, which I will not make, so you can omit that. I will read the answer:

"A. I can't imagine it would take anything different to break windows here than anywhere else. When we put one and a half millibars here, not every plate glass window in town goes. I suppose we take out the weak ones. It is not possible to say that one and a half millibars breaks all windows; neither could I say you could not break an improperly installed window with one millibar, although we didn't.

Q. Now, I believe previously you gave the effect of a 1.5 millibar in pounds per square foot. What was that? A. Three.

Q. Three pounds per square foot? [291]

A. 3.2, I guess it is.

Q. Now, the effect of this reading, millibar reading, is a change in atmosphere, is it not, a change in atmospheric pressure? A. That's right.

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Q. And can you tell us how a change in atmospheric pressure causes damage?

A. On the plate glass windows, this pressure of three pounds per square foot pushing in on the windows seems to do no damage whatsoever; the windows are well reinforced on the inside of the stores to hold the windows against window shoppers and wind. But the negative phase or rarefaction or suction phase which follows a 1.5 millibar compression is essentially 1.5 millibars of suction, and these plate glass windows are not fixed to withstand three pounds per square foot pushing from inside the store, so the plate glass window comes out.

Q. Now, all structures are subjected to atmospheric pressure. We're under atmospheric pressure now, are we not?

A. Absolutely.

Q. Does that pressure change during the day?

A. Right.

Q. Is the change greater during any short [292] period as a rule?

A. Well, during a matter of several hours, yes, but not comparable with the one or two seconds variations, except as we have gusts of wind.

Q. Will gusts of wind produce an atmospheric pressure change? What sort of gust of wind, what speed would produce an effect like that of 1.5 millibar change?

A. The Handbook of Engineering Fundamentals——

Q. You are referring to a text book?

A. Yes, Eshbach, 'Handbook of Engineering

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Fundamentals,' says that 3.1 pounds per square foot is equivalent to a thirty-five-mile-per-hour wind speed. In other words, an automobile driving thirty-five miles per hour has on the windshield one and one-half millibars excess pressure.

Q. As compared with the surrounding atmosphere? A. That's right.

Q. And at a 1.5-millibar reading, that is the effect that we have? It would be the same as the effect on the windshield of a car driving thirty-five miles per hour? A. Right.

Q. You stated with regard to the plate glass that the store was closed and therefore there [293] was a suction, did I understand you correctly?

A. Suction on the outside, or the windows blew out. As we reduced the pressure on the outside by one and a half millibars, there was a differential pressure across the window with three pounds per square foot more pressure on the inside than on the outside of the window, so the window was pushed out of the store.

Q. Does not the atmospheric pressure equalize itself on both sides of the window?

A. If the store is opened enough. If it had its doors and windows open it could equalize rapidly enough; but we shoot these things sometimes early in the morning, and, in the case of the particular picture you have there of the Sears Store, the doors were closed, the windows were closed, so the store couldn't breathe.

Q. Just to clarify that, the witness is referring

(Deposition of Dr. Everett Cox.)

to a picture heretofore shown him by plaintiff's counsel, 'Assuring Public Safety in Continental Weapons Tests,' page 90."

Mr. Weisz: That has been received in evidence, and it contains a picture of a store in Las Vegas which this occurred to.

Mr. Brett: That is stated in the next part. [294]

Mr. Weisz: Oh, I am sorry.

Continuing with the deposition:

"Then the change in pressures, at least of this type, the 1.5 millibar type, will not cause damage where pressure can be equalized, where a building has this breathing space you mentioned?

A. We have recorded higher pressures on the outside of buildings, and have done no damage where the building has been opened.

Q. So the net effect then, with the Las Vegas windows, was a thirty-five-mile-an-hour wind blowing from the inside? A. Right.

Q. Now, with a pressure of 0.35 millibars, could you translate that to pounds per square inch and/or into wind effect?

A. 0.35 would be twelve miles per hour wind effect. Wait a minute, now. You're reading millibars and I'm reading pounds per square foot. (Doctor computes) 0.35, that's .75 pounds per square foot, and a .75 pound per square foot is about eighteen miles per hour."

Mr. Weisz: At this point I stated there was nothing further, and after recess we continued with cross-examination by Mr. Brett: [295]

(Deposition of Dr. Everett Cox.)

“Cross-Examination

By Mr. Brett:

Q. Now, as I understand it, Dr. Cox, your duties in connection with these nuclear detonations at the Nevada Proving Grounds have been the endeavor, to the best of your ability, from your training and from such information as had theretofore been collected and reduced either to reports, or Government records, or private records, or texts, as to what results had occurred in connection with other operations in which force had been produced by explosive means, and by using weather data and other tests such as balloons, which were allowed to escape up into the air as far as they would go, to endeavor to predict with such accuracy as you could, the probable density of the force that would follow this nuclear detonation, and the area within which that force would operate, is that correct?

A. Correct.”

Mr. Weisz: I interjected at that point:

“Just one second; I just want to clear up the word ‘density.’ You probably mean magnitude—if that is the meaning you have in mind.

“The Witness: Density of force. I don’t know quite what it means.”

Mr. Brett: And I said, “I was referring to the force.” [296]

Mr. Weisz: And I stated, “We all understand, and I will stipulate that density means magnitude.”

Mr. Brett: I might say parenthetically, I looked

(Deposition of Dr. Everett Cox.)

it up in Webster's big dictionary, and it refers to it as "density of force." It probably doesn't make any difference. At any rate, we meant the effect of force.

"Q. I know nothing at all about nuclear weapons, and it's been a long time since I studied physics, but reduced to some form of simplicity, with the nuclear detonation or explosion of dynamite, or some greater force, or in between dynamite and a nuclear detonation, you are starting a physical force that tends at first to go away from the point of explosion and tries to escape, is that right?

A. The energy is moving outward.

Q. And as you stated, the original impetus would be in a spherical form. In other words, it starts from a central point and goes in all directions? A. Yes.

Q. One form of change of that direction would be that if it strikes some counter-force that would tend to deflect it from the point where it strikes something"——

Mr. Brett: ——"is that right?"

And the answer is, "Yes." [297]

Mr. Weisz: Oh, I thought it was a misprint. I guess I didn't read that question correctly.

Mr. Brett: You did not complete the question, Mr. Weisz. Do you want to read it again?

Mr. Weisz (Reading):

"Q. One form of change of that direction would be that if it strikes some counter-force that would tend to deflect it from the point where it strikes

(Deposition of Dr. Everett Cox.)

something, is that right? A. Yes.

Q. Then, another element that would, or could affect an explosive force caused by a detonation, either dynamite or TNT or a nuclear force, would be certain factors of the elements; by that I mean, that if you had the same explosion, that is, as far as the amount of force that was originally produced, and you had a relatively static atmospheric condition, no wind blowing, no moisture, and then had identically the same thing but a stiff wind blowing in a particular direction, or with precipitation of moisture, there would be a variance?

A. Moisture causes absolutely trivial differences; wind and temperature are the two elements that do make a difference.

Q. Although you had your first immediate [298] experience in predicting what would occur in connection with these detonations, and insofar as the Nevada Proving Grounds are concerned, during the series of October and November, 1951, the Government had conducted previous tests and they had accumulated, and there were made available to you some of the results of that test, is not that true?

A. There had been one series here in Nevada in the spring of that year, January and February, and I had available what data there was. No measurements of pressures off the proving ground were made, so I had no recent basis for my experiments. I had actually gone in 1946 to a series of explosions at Arco, Idaho, where the Navy had set off half-million pound charges of TNT; then I had gone to

(Deposition of Dr. Everett Cox.)

Helgoland in Germany to work on an explosion there when the British set off some five thousand tons; the British blew up Helgoland Islands. There were measurements made on those two sets. No measurements were made outside of the proving grounds during the January and February series.

Q. Enough had occurred, however, that it was rather well known that weather conditions would directly affect the results both at the immediate surroundings of the test and also some distance from the test; isn't that true? [299]

A. The effects are more pronounced at close distance than they are at some distance from the test.

Q. And is it not also true that, as stated in the published report of the Atomic Energy Commission, entitled *Assuring Public Safety in Continental Weapons Tests*, the accuracy in forecasting the direction and velocity of the wind is particularly difficult at the ground surface in a mountain-surrounded valley such as the Nevada Proving Ground?

A. I think the particular difficulty arises from the lack of statistical information in that the weather service has run there but a very short period during each of these test series; we have no continuing weather station there, so that the forecasters they have are not trained in what we call climatology. They are not familiar with the particular variances of the wind that occur in that particular area.

Q. Did you not also learn, as reported on page 97 of that report, that in the area where these tests

(Deposition of Dr. Everett Cox.)

were made, the winds might circle the compass in a very few minutes?

A. No. Not in a very few minutes unless we have a—shall we call it an absolute calm [300] breeze, where the gauge is not indicating more than one mile per hour and the air flows a little bit from here to there. I mean, it is not what one would regard as wind at all.”

The Court: We will take a five-minute recess.

(Recess.)

Mr. Brett (Reading):

“Q. Well, then where it states in the report that accuracy in forecasting the direction and velocity of the wind is particularly difficult in the mountain-surrounded valley where the detonations occur, since the winds may circle the compass in a few minutes, you don’t agree?

A. Neither can I completely disagree. These are called drainage winds; the winds’ magnitude may be two miles per hour as the air mass comes drifting down from a hill—these are winds of no consequence; these are drainage winds. In an absolute calm it is difficult to forecast which way the gauge will point.

Q. Did you not find that these conditions which were enumerated directly affect any pressures—at some distance from the proving ground? Would precipitation?

A. Blast effects, no. [301]

Q. Cloud cover?

A. No, not as such.

(Deposition of Dr. Everett Cox.)

Q. Temperature? A. Yes.

Q. Temperature inversions?

A. That's the same as temperature.

Q. And wind directions? A. Yes.

Q. Wind velocities? A. Yes.

Q. Are you familiar with the location of the property that is involved in this particular litigation?

A. Only to the extent that I have been told it is approximately a hundred miles due north, a hundred fifty miles due north.

Q. Do you know where the town of Eureka is?

A. I have seen it on the maps. I've never been there.

Q. This property is about ten miles east and about the same distance south of the town of Eureka. Now, in making your forecast did you have any facility in or near that locality to aid you in forecasting?"

Mr. Weisz: Then there is an interjection by myself, "What particular time are you talking about now?" [302]

"(By Mr. Brett): I'm referring to October and November, 1951.

A. There is a standard weather station in Ely, and I believe there's a standard—no, special weather station put up in Tonopah. I'm not positive. But as far as my instruments for these ozone signals, the nearest I had were St. George and Goldfield.

Q. Well, you know enough about this general

(Deposition of Dr. Everett Cox.)

area to know that the geology in the sense of the nature of the valleys and the nature of the mountains is entirely different in those two areas from that of the location of this property, don't you, Doctor?

A. I would so judge. I mean, the terrain varies very rapidly.

Q. Are you familiar with the fact that St. George is in a wide valley?

A. I have been in St. George; but our predictions in St. George, based on our minus-one-hour shot, show that the terrain, to the best of our knowledge, makes insignificant difference."

Mr. Brett: Now, I move to strike the last part of that, as not responsive to my question.

The Court: It may go out.

Are you sure you have that right? Does that read right?

That doesn't make any difference. It may go out. [303]

Mr. Weisz: I take it that the entire answer is going out, your Honor, as not responsive.

"Q. Doctor, if you were to assume, as a fact, that there was no earthquake, or earth disturbance, I'm talking about surface here, and there was heard this, I think it's a sonic reflection, and observed this tremendous force of wind, as a tremendous velocity of force, I'll put it that way, against these buildings, that was to shake them, and that occurred at the time when the reports disclosed that one of these nuclear detonations had been made, can you

(Deposition of Dr. Everett Cox.)

think of any reason for that indication of exceptional and unusual force upon these buildings other than the nuclear detonation?

A. No. My only query there—from talking with people in such a place as St. George after they, too, have observed these tremendous forces and so forth—I find completely utterly fantastically different stories; and that is the reason why a scientist relies upon measuring equipment rather than visual and audible and imaginative measurements.

Q. From the tests has it been disclosed that there is a very considerable vagary of the effect of [304] these nuclear detonations in this, that in one direction the force will apparently spend itself maybe in a distance of five or ten miles and in another direction leapfrog and spend itself in eighty or more miles? A. Yes.

Q. And with all of the equipment that you have had to date, both physical and material equipment, and technological information, such as you have been able to accumulate, even you, as one of the principal experts in this field, could not prognosticate before a nuclear detonation in what direction it would spend itself in ten miles and in what direction it would leapfrog, could you?

A. I differ. I could do a very fine job with respect to the low level signals for which I get weather data; on the high level ozonosphere signals, I can only guess until the time I make my minus-one-hour shot. I can guess from statistics, from the tests we have made.

(Deposition of Dr. Everett Cox.)

Q. And you have found that the results force-wise and distance-wise have varied materially from time to time?

A. As the winds have varied materially from time to time. [305]

Q. Is it not true that as recently as 1953, the effects of one of your nuclear detonations produced noticeable and distinct sound effects at Cedar City in Utah, some hundred seventy-five miles from the proving grounds? A. Correct.

Q. Isn't it a fact, Doctor, that so far as you know, at least, the very intent and purpose of these tests, including the ones made in October and November, 1951, was to gain further information and to find out how far the effect of these detonations could be traced and to what extent, if any, the force that would result from them would cause damage?

A. In a sense, yes. The Military, who would be users of atomic weapons, if required, are very much interested in what they refer to as militarily significant effects—what types of pressures are required to really wreck buildings. They are not at all interested in trivial pressures such as those that would crack plaster or suck out windows.

Q. What they are trying to find out is, by using varying degrees of nuclear force under various conditions, what results would be produced, is that not true?

A. Various conditions—hardly; if by that [306] you mean whether a bomb is burst a hundred feet

(Deposition of Dr. Everett Cox.)

off the ground, or two thousand feet off the ground, then they are interested;”—

Mr. Brett: And I note, your Honor, that apparently the reporter has emphasized the word “are”; at least it is underlined in the text.

—“but as far as varied conditions—they are also interested in what happens over different types of terrain within the test site; these measurements of which you are speaking are made within a matter of four miles at the most, from the point of detonation.

Q. But they are also taking information to the extent that they can get it to beyond four miles, aren't they?

A. The test organization is, in helping me improve my prediction system, yes.

Q. Now, was there discretion vested in you insofar as your activities are concerned to this extent, that if you found that some isolated farm or ranch setup or some community setup might possibly be affected, that you could change the type and character of the detonation so as to avoid it?

A. My function is Adviser to the Test Manager or Test Director; and when I either compute that pressures would be high”— [307]

Mr. Brett: I will have to go back. I see there is an insert at that point.

“A. My function is Adviser to the Test Manager or Test Director; and when I either compute from the forecast that pressures would be high, or we measure them as high on our advance TNT shot,

(Deposition of Dr. Everett Cox.)

I advise the Test Manager, and then it is his decision as to whether we go ahead and shoot, or whether we postpone. We can't change weather condition; we can't change the conditions of the test, except by delay.

Q. As far as you are concerned, you personally had no discretion; you made reports and they are used one way or the other?

A. I make reports—if I say the pressures will be such and such a size, he usually inquires whether that will or will not be damaging.

Q. I have a note in my notes in connection with your prediction of weather forecasts, something in reference to inhabited localities. Will you tell me what you said with regard to that?

A. Yes, sir. In August and through the test series of 1951 there were eight of these micro-barographs available in the country. I borrowed all eight, and I needed to use discretion in placing [308] the eight instruments to the best of my ability to give maximum protection to the greatest number of people. I was not able, with the eight instruments, to place an instrument at every farm house, ranch, that might be within the zone of receiving these pressures. I had to decide where I would place them to get the maximum protection for the maximum number of people.

Q. Then in connection to your reference to inhabited localities, you weren't referring to isolated ranches or farm houses but to a community of a number of people?

A. Right.

(Deposition of Dr. Everett Cox.)

Q. I believe you said also that of those eight instruments, a substantial portion were within the proving ground itself?

A. No, none were in that area; the nearest was at Indian Springs, which is on the edge of the proving ground;"——

Mr. Brett: Your Honor, may I step down to the board? I want to point these out, because one of the things I will later want to bring to your Honor's attention is that there was no one of these micro-barographs that was placed to the north, northeast, or northwest, even in near line to this property. [309]

"A. No, none were in that area; the nearest was at Indian Springs, which is on the edge of the proving ground;"——

I believe I have a map here.

Indian Springs, your Honor, as will be disclosed by Plaintiff's Exhibit No. 1, is on the south boundary of the proving ground, immediately adjacent to it, and just north and west of Las Vegas.

——"one instrument was there at Indian Springs; one at Beatty;"——

Beatty, as indicated on Plaintiff's Exhibit No. 1, is to the west of Indian Springs and slightly north, right near the California border. In fact, it is right at the California border.

——"one at Goldfield;"——

Goldfield, as shown on Plaintiff's Exhibit No. 1, is north and west of Beatty, about on a line with

(Deposition of Dr. Everett Cox.)

Tonopah, Nevada, and not far from the California line.

——“one in Las Vegas;”——

I think the court can take judicial notice of that, and I won't mention where Las Vegas is.

——“one in Henderson; one in Boulder City”——

all of which are close together in the Las Vegas area, as shown by Plaintiff's Exhibit No. 1.

——“one in Caliente”—— [310]

which is east and north of Las Vegas and just east-erly of the proving ground.

——“and one in St. George”——

which is north and east of Las Vegas, just east of the proving ground, but over in Utah.

“In each instance they were in communities.

Q. Now, if I have understood your direct examination correctly, approximately an hour, sometimes varying, as you stated, so it would only be half an hour and sometimes an hour, sometimes an hour and a half, but usually an hour before the detonation of the nuclear detonation, you would, in effect, conduct a pilot experiment with much lesser force?

A. Much.

Q. In other words, when you stated that you would conduct it with one ton—was it one ton?

A. Yes.

Q. That would be very substantially different than the force you were going to use in the test, wouldn't it?

A. Than the energy that is going to be released.

(Deposition of Dr. Everett Cox.)

Q. Now, you did find, not only from your own personal experiences but from your studies of the experiences of others, which were made available to you, that there were times when there could be very considerable changes in the weather conditions in that [311] hour's period, is that not correct?

A. A rather substantial change, yes. It is not constant; there were days when we observed very little change, and there are days when we have observed maximum change, which is rather substantial."

Mr. Weisz: At this point, your Honor, Mr. Brett asked the court reporter to find a question that he had marked by the reporter, and the reporter read that question as follows:

"And a difference between prediction and yield of ten per cent, being ten per cent greater yield, what would the effect be when scaled?"

Mr. Brett: That was one of Mr. Weisz' questions on direct examination which the reporter read.

Mr. Weisz: That is right. If the court will recall, I had asked the witness concerning the accuracy of scaling out in the estimated yield. He had stated that the predictions of the laboratory were within ten per cent of being correct as to yield from the devices during that period, and then I asked him what would be the effect of the scaling when the ten per cent came to three per cent.

Now, Mr. Brett asks:

"Now, tell me what you mean. What was the ten per cent you were referring to?"

(Deposition of Dr. Everett Cox.)

A. The ten per cent referred to there dealt with the accuracy of the Los Alamos prediction, in [312] advance of the experiment; the difference between their prediction of what the yield would be and the actual yield as measured at the time of the shot.

Q. By yield, are you referring to the amount of energy?

A. The amount of energy released.

Q. Is energy the same as force?

A. No, energy and force are not the same. Those are both scientific terms with very precise definitions.

Q. Then, in other words, when you were referring to yield in answer to Mr. Weisz' question, you were not referring to the amount of force that would be met by any object that came in the path of this energy that was released from the nuclear explosion?

A. The two are very closely related. We ordinarily express the yield of a weapon or device in terms of the equivalent number of tons or thousands of tons of TNT. When we speak of a nominal atomic bomb, we refer to an explosion that has the equivalence of twenty thousand tons of TNT, and that is the yield; the energy released by the nuclear device is the same as the energy that would be released by twenty thousand tons of TNT. [313]

Q. Now, then, as I understand it, when you answered Mr. Weisz' question that the notary marked, you were applying your experience by obtaining and reducing to measurement of the energy yield

(Deposition of Dr. Everett Cox.)

that had actually been developed after a nuclear detonation as compared with that which you had prophesied would be developed was within a ratio of some ten per cent?

A. The actual yield never exceeded the predicted yield by ten per cent.

Q. What did you mean when you said when scaled that would be reduced to three per cent?

A. I shoot my one-ton charge. I make measurements. Then, having been told what the energy release of the nuclear device will be, within ten per cent accuracy, the way it affects my scaling up of the data is only by three per cent, since the scaling factor I use is related to the ratio of the cube roots of the energies released. If the predicted nuclear yield is accurate to within ten per cent, then my predicted pressures, based on weather remaining constant, would be accurate within three per cent.

Q. Now, you used the term 'focus' as part of your direct testimony and you also illustrated it, or referred to illustrations of it, I believe, in this memorandum, that has been marked Exhibit B for [314] identification. Am I correct in interpreting and understanding your testimony that what had occurred was this: after the force of energy had left the starting point, it would come down to some point, and then start again and come down to another point? Is that what you meant by focusing?

A. The focus is the original concentration, and then repeated concentration. In other words, the

(Deposition of Dr. Everett Cox.)

lines that would contain the energy open up with altitude and then close in as they return to the ground, so that instead of finding a decrease of energy with distance, we find a decrease in the air and an increase on striking the ground.

Q. This energy is affected, I suppose, like other forces, by gravity, isn't that true?

A. Not in the slightest.

Q. How does it happen to come down?

A. It is bent down by the winds and the temperature which can be greater at altitudes than on the ground. So the top part of the sound travels faster than the bottom. Therefore it bends over and comes down in a bunch.

Q. In other words, if there is no adverse weather condition, they just continue on in a straight line until they dissipate? [315]

A. That's right.

Q. How are you able to tell where one of these focuses would end and another begin?

A. By mathematical computation from the weather data and known laws of physics, as far as the behavior of sound propagation is concerned.

Q. You don't have to have any station, then, on the ground or at some other place in order to re-establish the point at which the first focus ended and the next focus began?

A. I can compute this from the weather data, but it is very nice to confirm it with instruments. Complexity and size of these instruments nearly prohibits the moving of them, so before the test series begins I have to locate my stations. The

(Deposition of Dr. Everett Cox.)

weather puts these focal points where it desires; if a focus hits my station I have data; if it doesn't, I have no data.

Q. Is it true, Doctor, that the experiments which were conducted between October 22, 1951, and November 5, 1951, consisted in part of detonating weapons containing fissionable and radioactive material with the intent of creating and causing blast waves or air shock waves, which would reach into and bounce or rebound from atmospheric air [316] elevations which surround the earth, and which are defined as the troposphere, an air mass layer within the area from the earth's surface to an elevation of six miles; the ozonosphere, an air mass layer between twenty-five and forty miles above the earth's surface, and the ionosphere, an air mass layer fifty or more miles above the earth?

A. My answer to that would be no; that was not at all the purpose of any of these tests. When an explosion is conducted, blast waves are going to leave and go where the weather takes them, so in no sense could that statement be regarded as the purpose of the test.

Q. What is the intent and purpose, then, of the experiment?

A. The intent and purpose of the experiments conducted at the Nevada test site are improvements of fission weapons.

Q. Well, let's take it in parts. Wasn't the intent and purpose of the——"

Mr. Weisz: At that point I interjected to say:

(Deposition of Dr. Everett Cox.)

“We have got Dr. Graves, who occupies a higher position with the Commission. I’m not going to object, but I actually think he can answer your question——” [317]

This is still by Mr. Brett:

“I would like to ask the question.

Is it or is it not true that the experiments were conducted with the intent and purpose of creating and causing blast waves and air shock waves?”

Mr. Weisz: By myself:

“I will object to that question.”

I withdraw the objection.

“A. No explosion can be conducted without creating an air shock wave.

Q. In other words, that was the purpose, to create whatever would occur in the way of a blast wave and air shock waves?”

Mr. Weisz: By myself:

“I’m going to object as completely argumentative and as merely going over ground that has been previously covered.”

I would like to press that objection, your Honor.

The Court: Objection sustained. It has been asked and answered. He just got through answering that question.

Mr. Brett: Well, it is true, but I had him elaborate on the answer. It is cross-examination. I don’t say he was evasive, but I would certainly say that he was engaged in a lot of tautology. In other words, he was saying, “Yes, [318] we do the thing for a certain purpose, but we do not do it for the

(Deposition of Dr. Everett Cox.)

purpose of shock wave, but you can't do it without the shock wave." I think it is proper cross-examination, but your Honor has ruled.

The Court: Of course, it is argumentative. A simple way to say it is, if a man is going to take a shot at a deer, "Do you shoot to make a noise?" Well, you have to shoot to make a noise. It does happen to make a noise after he shoots, but that isn't the purpose of his making the shot.

Mr. Brett: Well, that is true, your Honor, and of course I am not bound by this Government testimony introduced before the court. We have an article published by the Atomic Energy Commission, which would be carefully considered, and he makes the direct statement that the primary and efficient thing with which they are concerned is the sound wave and effect.

Mr. Weisz: If counsel feels so strong about it, I will withdraw the objection. The answer may be informative.

The Court: Sustained. It is argumentative.

"Q. Isn't it a fact, doctor, that the principal element of these nuclear detonations is the shock wave?

A. There are several elements of interest to the Military, as far as weaponry is concerned, and the blast wave is certainly one of those phenomena.

"Q. You haven't answered. Isn't it the principal element of the test?

"A. Not if you want to set fire to something. If you want to start a fire to something, then the

(Deposition of Dr. Everett Cox.)

thermal radiation would be the principal in that case.

Q. Is it or is it not true that the times these experiments were conducted at the Nevada Proving Grounds between October 22nd and November 5th, 1951, that you and the others who were conducting the experiments knew that the shock waves which could be created from those detonations were capable of erraticable and uncontrollable destruction and property damage?

A. Nearby the test—nearby the site of the explosion, yes.

Q. Is it not true that you knew at that time that it was capable of such destruction for a distance of several hundred miles?

A. No. In fact, previous experience had indicated quite the contrary. Damage had been done in Las Vegas during the previous test series, and that is a distance of about seventy-five miles, which is not one or two hundred miles.

Q. Is it or is it not true that the experiments conducted [320] during the October and November, 1951, series at the Nevada Proving Grounds were made, in part, with the intention and for the purpose of determining how far and to what extent and in what manner damage and destruction would be caused from the forces which were released thereby?"

Mr. Weisz: At that time, I objected "as asked and answered on several occasions."

Mr. Brett: I think in that instance the objection

(Deposition of Dr. Everett Cox.)

is good and although there is an answer, I do not ask that the question stand.

Mr. Weisz:

“Q. Was there any effort made in your conducting of the tests to limit or control the distance within which such damage might occur?

A. Certainly. The particular experiments that are conducted at the test site are very much limited by the Los Alamos laboratory, and as such it very much limits the distance and degree of damage that could be done.

Q. Wasn't the only limit imposed in that manner the amount of nuclear energy that you would release?

A. That was not the only one. That is, of course, very important, but the damage done to locations off the test site is dependent on weather [321] conditions, so we make about every effort possible to know in advance of the tests what the weather conditions are so that we do limit the off-site damage by selecting the firing time.

Q. Are you stating, Doctor, that it is your knowledge that it was intended in those tests that there be no effect beyond the distance of a certain number of miles?

A. It is desired that there be no damage beyond a certain number of miles, and we do take very elaborate precautionary measures to see to it that no real significant damage is done outside of the test site.

Q. Are those measures of a classified nature?

(Deposition of Dr. Everett Cox.)

A. No.

Q. What are they?

A. They largely deal with the weather data. We obtain the weather data from these balloon soundings and attempt to calculate from that information and from my advance shot where damage might occur and how serious the damage might be.

“By Mr. Brett: That’s all.”

Mr. Weisz: And then Redirect, by myself:

Redirect Examination

“Q. Dr. Cox, during the shots of October 22, 28, 30th and November 5, 1951, can you tell us whether [322] the weather forecasts were reasonably accurate?

A. We obtain a group of forecasts. We do not operate on one forecast only; we have probably four or five weather forecasts as the shot time approaches; each successive forecast is better than the one before, so that the one on which we do fire the shot is the last forecast and, therefore, certainly reasonably accurate.

Q. By reasonably accurate, what do you mean? I asked you the question; now I ask you to explain the answer. What is ‘reasonably accurate’?

A. A forecast consists of thirty or forty pieces of data: the wind speed, the wind direction, and temperature at essentially every one, two, and five thousand foot elevation from ground to 50,000 feet; it is not uncommon at all for the forecaster to miss his forecast by perhaps ten miles per hour in speed

(Deposition of Dr. Everett Cox.)

or fifteen degrees in direction at any one of several elevations. As the zero hour approaches, he is using more up-to-date information from balloons just released, so that his forecasts get better still. A miss of only ten miles an hour or fifteen degrees is still considered very good."

Mr. Weisz: At which time both counsel stated that they had nothing further. [323]

At this juncture, your Honor, I would like to offer for identification, as we did with the previous depositions, the depositions of Dr. Graves, General Fields and Dr. Cox, for identification only, as Defendant's Exhibits A, B and C, in that order. Dr. Graves' deposition would be Exhibit A, General Fields' deposition would be Exhibit B and Dr. Cox's Exhibit C, for identification only.

Mr. Brett: What will those be, for my notes? What are they designated?

The Clerk: Graves, A; Fields, B; Cox, C.

The Court: They will be marked and I assume that the same stipulation is made that you had in the case of the other ones, that although they are not in evidence and only marked for identification, the court may refer to them in lieu of the record.

Mr. Brett: That is so stipulated. That is the purpose of it, your Honor.

Mr. Weisz: Yes.

In addition to that, your Honor, I would like to offer in evidence——

Mr. Brett: The chart in the back of the Cox

deposition, is that what you want? I mean that abstract?

Mr. Weisz: No. I think as an exhibit for identification that would be sufficient on those, but with regard to General Fields' deposition I would like to offer as a composite [324] the exhibits attached to that, being marked on the deposition as W-1, W-2, W-3, W-4, W-6, W-7, W-8, W-9 and W-10, as Defendant's Exhibit D.

Mr. Brett: No objection.

The Court: Very well. They will be received as one exhibit.

(Said documents, so offered and received in evidence were marked as Defendant's Exhibit D.)

Mr. Weisz: They are actually concerned with one course, your Honor, and therefore I offered them as one exhibit.

The last item for the defense is the deposition of Mr. Elmo C. Bruner.

DEPOSITION OF ELMO C. BRUNER

"Direct Examination"

By myself:

"Q. Would you state your name, please?

A. Elmo C. Bruner.

Q. And your address, Mr. Bruner?

A. My business address is 903 North Fifth Street, Las Vegas, Nevada.

Q. And what is your business, Mr. Bruner?

A. Architect.

(Deposition of Elmo C. Bruner.)

Q. Could you give us a brief resume of your educational background, please?

A. I graduated from Oklahoma A & M in May, 1931, Bachelor of Science and Architecture, and again in [325] July, 1931, Bachelor of Architecture; the difference is the Bachelor of Science degree is an engineering degree; the architecture is advanced architectural design, and Oklahoma A & M is an accredited college, recognized by Associate Collegiate Schools of Architecture.

Q. Are you licensed as an architect in this State, the State of Nevada?

A. Yes, the States of Nevada and Arizona.

Q. And have you been engaged in architecture since 1931, sir?

A. Yes, and building, yes, sir.

Q. What is the number of your license in the State of Nevada? A. 9.

Q. And in Arizona?

A. I believe it's 1357; then I have a Nevada Engineer's license.

Q. And the number of that, please?

A. 504.

Q. How long have you been practicing in Nevada? A. Since April, 1947?

Q. In architecture and construction?

A. That's right.

Q. Now, Mr. Bruner, did you visit the Bartholomae [326] Ranch or the Fish Creek Ranch near Eureka at any time, sir? A. Yes, sir.

Q. Do you recall approximately when that was?

(Deposition of Elmo C. Bruner.)

A. It was in 1952, in the spring of the year; I don't remember just when, either April or May; I could look in my notes; I don't know the day we were actually there——

“(By Mr. Brett): I have a note of April 23rd.”

Mr. Brett: 23rd.

Mr. Weisz: Yes.

Mr. Brett: Yes.

“The Witness: I believe it was; I can tell you for sure; it was the day we had the test up here, I think, called Operation Bigshot; we went to that site—to the test, and then went on to Eureka the same day and spent the night in Eureka and went on to Fish Creek Ranch the next day.

“Q. Can you tell us what you examined at that Bartholomae Ranch?

A. We went through all the buildings, as I recall; there were four in particular in which the owners were perturbed about breaks in the plaster.

Q. Did you examine the breaks in the plaster in those buildings? [327]

A. Yes, sir.

Q. Can you tell us what type buildings they were?

A. In my report, if I recall, I made a note that the buildings were well built; better built than the average farm building. They're frame buildings, rigid asbestos shingles on the outside with plaster board, 16 x 48 inch panels on the studs on the inside over which there is a plaster coat that appears to be hard wall plaster; I don't believe it's fibered. It's applied in the usual manner, from $\frac{3}{8}$ to a

(Deposition of Elmo C. Bruner.)

half inch thick, the final coat being an integral color in the plaster; that's basically what they are.

Q. This is for all four of the buildings?

A. Yes.

Q. Can you tell us what the common names of these buildings are, is there any way of distinguishing them?

A. There was the ranch foreman's house; the bunkhouse; Mr. Bartholomae's home, when he was there, and the other one—I could look back in my notes.

Q. Would that be the mess hall?

A. Probably, yes, it would be; we were in the mess hall.

Q. Did you see cracks in these buildings in the plaster? [328]

A. Yes, sir.

Q. Can you describe to us the cracks to any extent?

A. Yes, they are typical average plaster cracks; the bulk of them appeared along lines of regular construction; by that I mean they appeared on the studs, on the fire block and in the regular panel; as a general rule along the line of the rock lath itself, on the 16 x 48 inch panels, the breaks usually occurred along either the 16 inch line of the plaster board or the 48 inch. In other words, we could count the spacing of the studs between breaks in the plaster; the cracks usually weren't wide.

Q. Mr. Bruner, were the cracks jagged and at irregular angles?

(Deposition of Elmo C. Bruner.)

A. Usually they were straight lines; there were very little random breaks, there were a few.

Q. Were they right-angle cracks?

A. They would go on the studs where the button board or rock lath—those were right-angle breaks but there were a few cracks that would go diagonally along the wall; there was some evidence of that and hard experience to us indicates that that occurs only when there is a poor mix of plaster or a poor adhesion to the rock lath. [329]

Q. The rock lath that you mentioned, what is that?

A. It's plaster board papered on both sides. Sometimes there are perforation holes in them, sometimes there isn't. That's of no particular consequence to me. However, there is a controversy as to the structural values of these holes. The plaster board people say you get a mechanical key where the plaster pushes through the holes and goes over behind the plaster board, it holds on. But the other people, in turn, say no, it's better to depend on the adhesion of the plaster to the paper because if you break the vacuum the plaster will break. Now, there are two types of paper; the plaster board is supposed to be placed with the right side out at all times because the plaster will not adhere to one side of the rock lath. It's put on in the interest of economy; the adhesion paper costs more than the slick paper—if the mechanic inadvertently puts the slick side out there will be no adhesion to the plaster at that point. Now, one more thing, while we're on

(Deposition of Elmo C. Bruner.)

the plaster board. When a mechanic installs this plaster board, there are no measurements taken whatever; they apply it to the studs. If it fits"——

Mr. Brett: At that point I move to strike that as a [330] conclusion of the witness, for which no foundation had been laid. I make the same motion.

The Court: Read that again.

Mr. Brett: He added:

"Now, one more thing, while we're on the plaster board. When a mechanic installs this plaster board, there are no measurements taken whatever; they apply it to the studs. If it fits"——

The Court: Read the question.

Mr. Weisz:

"Q. The rock lath that you mentioned, what is that?"

The Court: Now, read the answer.

Mr. Brett:

"Now, one more thing"——

The Court: Is that where the answer starts?

Mr. Brett: No.

The Court: I am trying to find out if the answer is responsive to the question.

Mr. Brett: Well, it isn't, and that part of it is a conclusion of the witness. First, there is no foundation, but I also move to strike on the ground it is not responsive.

The Court: Well, it will go out on that ground; it is not responsive.

Mr. Brett:

"A. What I'm speaking of is, this as a [331]

(Deposition of Elmo C. Bruner.)

practical matter of the man applying the rock lath to the studs. He nails it on and he uses a hand axe—if the studs facing is equal and he had no joints to cut, it is applied in an orderly manner; but at the corner of the walls where the studs spacing is not equal and where he has to lap his joints, he cuts the lath by sight without taking any measurements and that's well established in the trades. Sometimes there's an eighth and sometimes a half-inch joint.

Q. Is this the usual and common practice in the State of Nevada? A. Very common."

Mr. Brett: At that time I moved to strike the entire answer beginning with what he detailed as having been done, on the ground that it is a conclusion and upon the further ground that there had been no foundation laid to show he has any knowledge whatsoever as to what was done in this case. And I will add to it, that that answer is not responsive to the previous question.

The Court: Is it your contention that this witness was not qualified as an expert? Is that correct?

Mr. Brett: No, no. I don't make that contention, but I do make the contention that he cannot testify under that qualification as to what was specifically done, as far as this property was concerned. However, by the time we got to this [332] deposition we were quite tired that day and I think I could say, your Honor, that since that answer was a continuation of his answer to the other question, which was, "The rock lath that you mentioned, what is that," it should be eliminated as not responsive.

(Deposition of Elmo C. Bruner.)

The Court: Well, the objection is overruled.

Mr. Weisz:

“Q. In your examination of the building, Mr. Bruner, did you see, either from the cracks or otherwise, evidence which, on the basis of your experience, gave you to understand that the rock lath had been applied in that manner?

A. Not to affirm or deny it; I did climb up in the attic but I didn't see the bottom of the ceiling joints where the lath was improperly applied or whether it was a half or an eighth joint; I didn't see it.”

Mr. Brett: On the basis of that answer, I renew my objection and restate it on the basis heretofore stated. I am not objecting to his statement as to what the practice in Nevada was. I am objecting to his statement in effect as to what was done on this property.

The Court: Well, he has testified that he did not see that.

Mr. Brett: That is right. [333]

The Court: Let me see the deposition. I think you are getting tired this morning, too.

Mr. Brett: That may be.

The Court: I have difficulty following you.

Mr. Brett: It begins over on another page, but I thought you wanted the beginning of the page.

The Court: Where is the portion that you are objecting to?

Mr. Brett: I will find it, your Honor. Well, to

(Deposition of Elmo C. Bruner.)

save time, your Honor, I will withdraw the objection, I think; when he says he can neither affirm or deny it, I will let it stand.

The Court: We will recess until 2:00 o'clock.

(Whereupon, a recess was taken until 2:00 o'clock p.m. of the same day, Thursday, May 12, 1955.) [334]

Thursday, May 12, 1955—2:00 P.M.

Mr. Weisz: If we may continue, your Honor, at the top of page 8:

(Whereupon, counsel for the parties continued the reading of the deposition of Elmo C. Bruner, as follows, to wit.)

Mr. Weisz:

“Q. Now, are you familiar with this type of construction and its wearability in the State of Nevada? How well it stands up?

A. Oh, yes, we consider most of those have an average service life of about thirty years; that type of building.

Q. Is this a common type of construction in this State?

A. Very common. I personally participated in the erection of about two thousand such buildings since I've been in Las Vegas.

Q. Are the general climatic conditions in Las Vegas comparable to those near Fish Creek Ranch?

A. It gets a little colder up there.

(Deposition of Elmo C. Bruner.)

Q. Does it also get warmer up there?

A. No. It gets hotter up here; the temperature range is about the same.

Q. Now, Mr. Bruner, in your experience [335] with this type of building, this is our frame construction, rock lath and then plaster put on over the rock lath, are cracks apt to appear in the plaster during the passage of time? A. Yes.

Q. Is that due to the manner in which the plaster is applied or what would it be due to?

A. There are several contributing factors and the experience has been borne out in Nevada and other states all the way from Minneapolis and St. Paul through the entire midwest, I found very little difference; first, to me, the biggest single factor is the frame of the building itself; by that I mean we start with the foundation, we bolt down a wood plate on the top of it. Now, the top of the concrete foundation is never exactly level, it's physically impossible for men to do it; there are three ways to handle this; one is to ignore it; the other is to shim it up with wood shingles or put on a grout of cement and sand to level the plate. In the instant case nothing was done. Now, on the top of that plate we set the floor joists, which are wood; on top of the floor joists we set the partition frames, which consist of a bottom plate, studs and two top plates. In the instant case this latter partition frame is all made [336] of two by fours. Now, if we start back at the top of the foundations again we have"—

Mr. Weisz: Then, by myself:

(Deposition of Elmo C. Bruner.)

“Let the record show that the witness is looking at a typical wall section, which he has prepared, which we will offer as Defendant’s A for identification at this time, in order to save time.”

Mr. Brett: And the drawing, I believe, is annexed.

Mr. Weisz:

“(By Mr. Brett): Do you by any chance have an extra copy of that?”

Then the witness said, “Yes,” and he handed a copy to Mr. Brett. Then, the witness continues:

“We have eight bearing connections, all of which have a possible variation of a minimum of a thirty-second of an inch, and in some cases a quarter of an inch. So it is very apparent that we can get at least a quarter of an inch settlement in the frame of the wall itself. Now, let’s isolate the stud walls to illustrate why we have these problems. A carpenter, even a master, is going to saw—we will say in this case up there, in any of those buildings there will be at least three hundred wall studs, theoretically, they are eight feet long. Now, he has to saw and measure each of those by hand. If [337] he measures and misses his saw cut the width of his saw blade, he’s missed it at least a thirty-second of an inch. Say that happens at the top and bottom, or a total of a sixteenth of an inch on any one stud minimum, and they frequently go as much as a quarter of an inch.

Q. What is the result of that, Mr. Bruner?

A. Settlement.

(Deposition of Elmo C. Bruner.)

Q. Does this settlement take place long after the initial construction?

A. That's right, it takes place continuously and then it will expand in the seasons; as the building gets older it expands even more. There are several factors within the materials themselves that further accelerate or retard and we call those the coefficient of expansion of materials.

Q. Mr. Bruner, by that, do you mean that the materials of which a building are constructed change their size with temperature?

A. That's right.

Q. And will the expansion and—I presume also there is contraction?

A. That's right, it is constant through a twenty-four hour period.

Q. Will the expansion and contraction such [338] as that in an area like Fish Creek Ranch in Nevada, produce, in the normal and usual course, cracks in the plaster? A. Yes.

Q. Will that expansion and contraction produce cracks such as those you observed in the buildings there? A. Yes.

Q. From your observation of the buildings and from your experience, what do you think caused—what, in your opinion, caused the cracks that you saw there?

A. My honest opinion is the biggest single factor is the temperature range and the frame of the building, what I spoke of a moment ago, about the stud lengths.

(Deposition of Elmo C. Bruner.)

Q. Does even a very well-built home of this type of construction develop plaster cracks?

A. They all do it. Even before we finish we have the breaks and five and ten years later we have the breaks, and there is not a building in the town that doesn't have the cracks. Even this building we're in, which doesn't enter into it, but I bet I could find an awful lot of plaster cracks in this building that you can't see.

Q. What we have marked as Defendant's Exhibit A [339] for identification, is this typical of the construction in the Bartholomae Ranch?

A. That's typical.

Q. You could tell that from your observation of the building?

A. Well, we looked under the floor and crawled up in the attic; we could see the thickness of the walls by looking through the doors and the windows and by seeing the breaks in the plaster from which we could measure the spacing of the studs.

Q. One further thing, Mr. Bruner. The plaster that is put on over the button board or rock lath, how is that put on, what is that?

A. The surface coat was nothing more than a color coat, which was purely for decorative effects; it is a very orderly job, well built; underneath it, where we could see through the cracks, there was a hard-walled plaster, which we know in the trade as hard wall plaster, which is a gypsum plaster. Now, I couldn't detect whether or not it is fibered unless I just tore out a section of the wall, which we didn't

(Deposition of Elmo C. Bruner.)

want to do and damage the building. Now, by fibered plaster we mean this: Plaster is inherently a very weak material and they put fiber of hemp, wood or hair in the plaster to hold it together because the [340] wood fibers or the hemp or hair fibers are intermingled in a countless number of different directions and it acts as a reinforcing mesh but I couldn't see any of it in the cracks I observed."

Mr. Weisz: And I said, "Nothing further."

We will continue with the Cross-Examination by Mr. Brett.

Cross-Examination

"Q. Mr. Bruner, you were up there in the spring, you say, of 1952? A. Yes.

Q. And the first time you went up there you went at the request of General Adjustment Bureau?

A. Yes.

Q. Who accompanied you?

A. Mr. Wesley Hall.

Q. He is an adjuster, is he? A. Yes.

Q. Now, who did you meet at the ranch?

A. Well, we met the ranch foreman.

Q. Mr. Seale?

A. I wouldn't know the ranch foreman at the time. We met him and his wife, in fact, we met the whole crew, but I don't remember the names.

Q. Now, at that particular time had you formed some sort of a preliminary conclusion as to what probably [341] had caused these things?

(Deposition of Elmo C. Bruner.)

A. I didn't know what they were or anything about them. I had no idea.

Q. And you also went back on June 30th?

A. Yes, I met Mr. Bartholomae and Mr. Millard.

Q. And you also met a Mr. Norwood, who was the contractor who built the property?"

Mr. Brett: Your Honor, I did so state in my question, but I want to state to the court that I learned afterwards that I was erroneous in that portion of the question in which I interpolated that Mr. Norwood had built these properties. He did not. The answer is:

"I met Mr. Norwood.

"Q. And you met someone from some plaster company?

A. I met a man from the United States Gypsum Company and an attorney for Mr. Bartholomae.

Q. A Mr. Mize? A. I don't know.

Q. You went there to find out, if you could, what the cause was of the damage you saw to the buildings, is that right? A. Yes.

Q. I believe you testified on direct examination that you tore no section out of the buildings to find out anything about their construction? [342]

A. No, I didn't. I didn't want to damage the building.

Q. Mr. Norwood had with him a set of the plans and specifications of these buildings, didn't he?

A. He didn't show them to me.

Q. Didn't you learn at that time from Mr. Bar-

(Deposition of Elmo C. Bruner.)

tholomae that Mr. Norwood was the contractor who had built those buildings?"

Mr. Brett: Again that was a misapprehension on my part. The answer is: "A. I don't recall. He might have made the statement, but I don't recall.

Q. Did you make any inquiry of anyone there as to the age of the buildings? A. Yes, sir.

Q. When did you find they were built?

A. As I recall they told me they were about ten years old.

Q. Ten years old in 1952? A. Yes.

Q. And did you make any inquiry of anyone there as to the type of construction of the walls?

A. I didn't need to. I could see it.

Q. Well, from your examination, as I understand it, you said you were not able to tell whether this plaster was fibered? [343]

A. I couldn't see it through the cracks.

Q. Didn't you state that you couldn't tell whether it was fibered? A. That's right.

Q. And by fibered I think you said if it was, it would have more strength? A. That's right.

Q. By the way, you said there were three types of fiber, wood and hair and what was the third?

A. Hemp.

Q. Did you ask Mr. Norwood or anyone else whether this plaster was fibered?

A. Yes, I asked.

Q. What did they tell you?

A. I asked specifically what kind of plaster is

(Deposition of Elmo C. Bruner.)

this, and he said plaster. Again I asked and he said plaster, and I said, 'Look, there's fifty or sixty different kinds of plaster, what kind is it?' The poor fellow blushed and I said, it is gypsum, hard wall or gauging plaster or cement plaster, and finally I said, 'It's hard wall plaster, isn't it,' and he said, 'Yes,' and that's all the information I could get, but nobody answered specifically if it was fibered plaster or not.

Q. In your answer you have related 'he,' who was he? [344]

A. Mr. Millard.

Q. Did you ask Mr. Norwood?

A. I was not talking directly to Mr. Millard. The question was directed to all three of them, Mr. Millard, Mr. Norwood and the United States Gypsum Company man, but no one answered the question.

Q. Had you ever been to this ranch before your trip in April, 1952?

A. No, sir.

Q. And have you been there since your May trip?

A. No.

Q. Were these cracks that you saw new or old cracks?

A. Both. Some of them were so old that they were obviously repaired when the building was built because they had been racked out and refilled with plaster of the same color.

Q. Where were those?

A. In all the buildings.

Q. It is your testimony, as I understand it, that

(Deposition of Elmo C. Bruner.)

they were old cracks that had been repaired in all the buildings?

A. In all the buildings, yes, sir.

Q. Did you direct anyone's attention to that fact? [345] A. Yes, sir.

Q. Whose attention did you direct to that fact?

A. Mr. Millard, Mr. Norwood, and the United States Gypsum man.

Q. Did you ever meet two Mr. Millards?

A. I met the young one. I never met the old one.

Q. When was this drawing that has been marked 'A' for identification made? A. Yesterday.

Q. This doesn't purport to be a true representation of the buildings out there, but merely—

A. Just merely typical, that's all, that's right.

Q. The construction on those buildings, then, could or could not be the same as this, is that right?

A. That's right.

Q. I believe you referred to the fact that the bearings were hand sawed? A. The studs, yes.

Q. The studs were hand sawed? A. Yes.

Q. Did someone tell you that was true?

A. I don't need to be told.

Q. Could you tell from your examination?

A. Yes.

Q. What means did you have? [346]

A. When I got up into the attic and looked down the line at the plates, they were irregular.

Q. So you drew the conclusion from that, that they were not power sawed?

A. It wouldn't make any difference; there is

(Deposition of Elmo C. Bruner.)

still the human element, you can't saw three hundred pieces of wood the same way.

Q. Then you don't know whether they were hand sawed or power sawed?

A. Some of them had to be hand sawed because they don't put a power saw on the ceiling to saw ceiling joists. As a matter of fact, Mr. Brett, a man sawing a joint by hand is more accurate than a man sawing a joint with a power saw.

Q. You obtained some information regarding the temperatures at Ely? A. Yes, sir.

Q. Did you, in the course of your investigation, learn that as a part of the operation of that ranch, they had a weather station and had a record of temperatures right there? A. No.

Q. You didn't see such an installation right by the buildings you were inspecting?

A. No. [347]

Q. Do you have a record with you of the temperatures you considered at Ely? A. Yes.

Q. Will you produce it?

A. This is a carbon copy of a letter that was directed to me from Wesley Hall, direct to Mr. W. A. Bartholomae, Jr., dated May 6, 1952, wherein Mr. Hall has reproduced my original report to the General Adjustment Bureau.

“(By Mr. Brett): Will you mark that Plaintiff's 1 for identification, please?”

It was so marked.

“The Witness: May I request that I get a copy of this back for my own files?”

(Deposition of Elmo C. Bruner.)

“(By Mr. Brett): All right.

Now, will you examine page 3 of that letter?

A. Yes, sir.

Q. And in that letter on the top of page 3, you have a reference to the Government record of highs—that is extreme high, and extreme low during a particular year at the station which is maintained at Ely, and for the period between 1941 and 1952, is that right? A. Yes.

Q. Actually, 1952 doesn't show any high, does it? [348]

A. No, because it was too early, but it shows a low.

Q. Now, during what period of the year, in your opinion, would the highest differential in temperatures occur? A. Winter.

Q. And what months would you consider winter?

A. Well, of course, the astronomical winter is from December 21st to April 21st.

Q. I am referring to what you refer to, not an astronomical winter.

A. I would say at least the middle of November to the middle of March.

Q. You would say, then, from the 15th of November to the middle of March? A. Yes.

Q. Now, as I understand, you drew the conclusion that the plaster cracks that you saw on your visit to the ranch property in April and May of 1952 were the results of temperature changes?

A. That's right.

Q. And such a result would not be confined to

(Deposition of Elmo C. Bruner.)

one year, it would occur when there were extreme changes in temperature in any year, isn't that right?

A. That's right, it wouldn't make any difference. [349]

"Q. And that would be relatively continuous each year, if you had a wide range of temperature with quick changes, there probably would be some cracking occur, is that right?

A. That's right.

Q. If that conclusion is true, then there should have been evidences of substantial cracking not only in the year 1951 but in any other year in which there was considerable temperature changes, is that right?

A. That's right, which was evidenced by the fact that some of the plaster was cracked and patched before the buildings were finished.

Q. Is it in your knowledge that there have been substantial changes in temperature in that particular area, referring to the area of this ranch, since May of 1952? A. Yes.

Q. And would you not then assume that there would be further cracking?

A. Yes, sir, I would.

Q. Then, if there were no further cracks, at least it would indicate that conclusion might not be correct?

A. That would be a logical conclusion but [350] I would like to examine the buildings because I can show them further cracks.

(Deposition of Elmo C. Bruner.)

Q. I would like to have you examine the buildings, if I could authorize, it, but, of course, I can't.

Now, if you will examine your record of the Ely temperatures, you show probably the highest differential there in the years 1942 and 1943.

A. For that particular year?

Q. No, for any of those years the highest differential——

A. No. The highest is from 1942 and 1943 to 1952. It makes no difference when it takes place, the Good Lord putting the sun above the earth is no respecter of building materials.

Q. In other words, on the theory that you have there, the cracking would most likely occur when there is the highest differential in temperature?

A. That's true, in that the cracking will occur over the years, but it is more apt to occur in a twenty-four hour period of maximum range in temperatures.

Q. Now, you refer to a manner of installing the button lath? A. Yes.

Q. Did you make any inquiry of anyone there as to whether that manner was followed in this particular [351] case? A. No.

Q. Could you tell if from your own inspection?

A. Except in the breaks in the regular pattern of the lath.

Q. You didn't strip any of it? A. No.

Q. You don't know whether they used a regular or irregular pattern, do you?

A. Yes, they used irregular patterns, because I

(Deposition of Elmo C. Bruner.)

could see it; the buildings were well built and very orderly, let's understand that; they are very good; better than the average, in fact, but plaster still breaks.

Q. Now, this communication, marked Exhibit 1, is the report that you made to the General Adjustment Bureau for the Government?

A. Yes, sir.

“(By Mr. Brett): I would like to offer it in evidence as Exhibit 1 in connection with this man's testimony.

Nothing further.”

Mr. Weisz: “Redirect Examination” by myself:

Redirect Examination

“Q. That which we have identified as Defendant's Exhibit A, for identification, from your inspection of the Bartholomae buildings, this is a typical example of [352] the construction used in those buildings, is it not?

A. That's right, it's good construction, and that is typical.”

Mr. Weisz: And by myself: “I will offer that with the deposition.

“Q. You have stated, Mr. Bruner, that cracks will ordinarily and customarily appear in buildings constructed as the Bartholomae buildings were, due to temperature variations, in the course of time?

A. Yes, they will widen in the winter and close up in the summer.”

(Deposition of Elmo C. Bruner.)

Recross-Examination

“By Mr. Brett:

“Q. You know that there have been some cracks in plaster buildings which the Government has paid for as the result of these Atomic Energy Commission's tests, do you not? A. Yes.

“(By Mr. Brett): And I assume that in the course of your experiences, you have examined those buildings? A. No.

“(By Mr. Brett): You haven't examined any on which they have paid for plaster cracks?

“A. I examined one.

“(By Mr. Brett): Did you find any difference in the pattern of the cracks of the plaster in that particular instance than you found up there? [353]

A. None whatever.

Q. In other words, then, from the standpoint of mere visual examination of the construction, without taking out a section and seeing the after-effect, there was no way you could tell by examining the Bartholomae buildings, in which, in your opinion, the cracks were the result of temperature changes, and examining the one building in which there were, you said, cracks which were the result of an Atomic Energy Commission blast, you couldn't tell any difference from a visual—a visual difference from what you could see?

A. I didn't see any in plaster.

Q. What type of building did you see, then?

(Deposition of Elmo C. Bruner.)

A. They paid for some breaks in a masonry wall; that was the only one I ever visited that they paid.

Q. Then you didn't see any of the buildings in which there were plaster cracks and for which they paid?
A. There is one exception.

Q. Just answer one way or the other. Did you or did you not see any buildings in which the plaster was cracked for which the Government paid a claim on the basis that such damage occurred from the Atomic Energy Commission's blasts?"

Mr. Weisz: At this point, I interjected: [354]

"Just one second, Mr. Brett. I am going to object to this entire line of questioning on the basis, among other things, that we are going beyond the knowledge of Mr. Bruner as to whether or not they were paid, and further that it's far beyond the knowledge of Mr. Bruner as to why a claim might have been paid, if he knew it was paid, and, third, on materiality. I'm just bringing that up so if you can frame the question to eliminate the objection, I suggest you do so.

"Q. (By Mr. Brett): Well, I thought he said he knew these facts.

As I understand, you have, from time to time, been employed to examine properties on which claims have been made against the Atomic Energy Commission, is that right?
A. Right.

Q. And those claims, so far as you are informed, were on the basis that the damage had been caused

(Deposition of Elmo C. Bruner.)

as a result of exploding nuclear weapons on the Nevada proving grounds, is that right?

A. Right.

Q. Did you examine any of those properties in which the claim was for plaster cracks?

A. Yes.

Q. Did you examine any on which you had [355] been informed the Government paid the claims?

A. One.

Q. Where was that?

A. Here in Las Vegas.

Q. And that was a case where plaster was cracked? A. Yes.

Q. Was there any difference in the appearance of that crack that was discernible to you and the appearance of the cracking at the Bartholomae ranch?"

Mr. Weisz: Your Honor, I will object to that question on the ground that it is irrelevant and immaterial and does not go to the issues of this case.

The Court: The objection is overruled. You objected to the wrong question.

By Mr. Brett:

"A. No, this—I would like to explain what happened. I didn't authorize the payment; the payment was made a year before I got in the picture. What actually happened, in the first series of tests, the Government authorized the payment on the claim."

The Court: That is not responsive.

Mr. Brett: That is true, but I have to read it.

The Court: Yes.

(Deposition of Elmo C. Bruner.)

Mr. Brett: Because I have said that very thing, your Honor: [356]

“What actually happened, in the first series of tests, the Government authorized the payment on the claim.”

At that time, if the court please, I stopped him. I said, “Just a minute. I will object. He is not answering the question.”

He was explaining his answer. So I move that go out.

The Court: All right. It may go out.

By Mr. Brett:

“A. The following year they filed another claim for damage on the next series of tests and the Government sent me out and I recommended the claim be denied and I made a very close examination of the building. I explained to the man, the claimant, that the break was caused by a strongback. A strongback is a structural member that goes down the center of a ceiling at right angles to the ceiling joist, which was required by the Federal Housing Administration’s architectural department at that time, or at the time that house was built. Experience has dictated that when we put in a strongback in a plaster building, we invariably get a plaster break along the line of the strongback where this break occurred. The Federal Housing Administration recognized the structural weakness and has since absolutely excluded the use of a strongback in buildings insured by the Administration. I explained it to the [357] claimant and he took his

(Deposition of Elmo C. Bruner.)

saw and sawed the strongback out and we haven't heard from him since."

Mr. Brett: I will object to that and move to strike it as not responsive to the question.

The Court: I think you are just barely ahead of Mr. Weisz. I think he was going to——

Mr. Weisz: Mr. Brett had made that objection on the record and I think it was well taken.

Mr. Brett: I made the motion to strike.

The Court: It will be granted. It may go out. Incidentally, the question you have objected to has never been answered.

Mr. Brett: All right, your Honor.

The Court: I don't know why you made the objection. There has never been an answer to the question.

Mr. Brett: That is true, your Honor, he never did answer.

The Court: All right, you may proceed.

Mr. Brett: "Now, Mr. Bruner, I show you one of the Government's reports, *Assuring Public Safety in Continental Weapons Tests*, published in January, 1953. When was this that you say you went out to see a property on which a claim for damages was paid?

"A. The same year I went to Eureka, 1952.

Q. And that was, then, after the tests that [358] were made in October and November, 1951?

"A. That's right.

Q. Now, is this the second time or the first time?

(Deposition of Elmo C. Bruner.)

A. The second time I went out the claim was denied.

Q. In the footnote 4, page 88, of this report, there is a statement here that a total of 294 claims resulted from the second series of October and November, 1951, and it states how many were settled and the amount and it says all resulted from the November blast; then were allowed * * * again for plate glass windows in Las Vegas, the balance being for cracked stucco, plaster and smaller items——

A. That's November, 1951?

Q. Yes; now did you examine and make any report upon any of the properties on which those claims were paid for damages resulting from the blast on November 1, 1951?"

Mr. Weisz: To which I will object, your Honor, that it is irrelevant, it is immaterial, and it is beyond the knowledge of the witness.

Mr. Brett: Well, it so happens he said, "No," so I won't make any contest of the objection.

The Court: Objection sustained. [359]

Mr. Weisz:

"Q. Then you never saw those particular cracks?"

Mr. Weisz: To which I will object.

Mr. Brett: Again he said, "No," and I make no question about it.

The Court: Very well.

Mr. Weisz: That completes the examination.

I would like to offer this as Defendant's Exhibit E for identification, with the same stipulation as

on the other depositions, that the court may use it for convenience in lieu of the record.

The Court: Very well. It will be marked.

(Said deposition transcript of Elmo C. Bruner was marked as Defendant's Exhibit E for identification.)

Mr. Weisz: The United States rests, your Honor.

(Whereupon, the defendant rested its case.)

Mr. Brett: Your Honor, I would like to ask that the clerk be permitted to take that drawing, that is, loosen that drawing so that we can use it on rebuttal, that is in the back of Mr. Bruner's deposition, I believe, marked as an exhibit. It is the last one that is a drawing. I don't know the exhibit number.

I would like to recall, for a brief rebuttal, Mr. Norwood.

The Court: This drawing that you are referring to, is [360] that the drawing that was admitted into evidence?

Mr. Brett: No. It was the drawing that was referred to several times in Mr. Bruner's testimony as being typical. I will find it here in just a minute.

Mr. Weisz: It was part of Mr. Bruner's testimony. It was explanatory of his testimony. I did not offer it in evidence, feeling that it deserves about the same status as his testimony. It is merely illustrative.

The Clerk: Is this the one, Mr. Brett?

Mr. Brett: That is right. What will that be, F?

The Court: That has not been marked yet, is that it?

Mr. Weisz: No, your Honor.

The Court: It will be marked next in order.

(Said drawing was marked as Defendant's Exhibit F for identification.)

Mr. Brett: So we can tie it in, then, may the record show that the document which is now received as Defendant's Exhibit F in evidence is the same document which was referred to in Mr. Bruner's deposition as Defendant's Exhibit A for identification?

The Court: There is no objection to its being received in evidence?

Mr. Weisz: No, your Honor.

The Court: All right. It will be received in evidence.

(Said drawing previously marked Defendant's Exhibit F was received in [361] evidence.)

Mr. Brett: Will you take the stand, Mr. Norwood?

JOHN L. NORWOOD

recalled as a witness herein on behalf of the plaintiff, having been previously duly sworn, testified further as follows, in rebuttal to wit:

Direct Examination

By Mr. Brett:

Q. I am going to show you the drawing, Mr. Norwood, which has just been received as Defend-

(Testimony of John L. Norwood.)

ant's Exhibit F. Will you state to the court whether or not that is in any way typical as an example of the construction of the properties on the Bartholomae Fish Creek Ranch?

A. Well, it is typical in the manner that that is the way a number of materials are put together, it is in the order that they are put together. There is no scale on the drawing or sizes of any material except the studs.

Q. Would that drawing be of any assistance at all in determining the construction of the building?

A. Only in the order in which the materials were put together, yes.

Q. And what things are not in that drawing to make it complete?

A. Well, there is no scale on the drawing, so it doesn't show how far the footings are in the ground or how wide the foundations are or the size of the floor joists. [362]

The only indication as to size is the 2 by 4 fire blocking and the 2 by 4 studs, but there is no indication as to any roof bracing, any insulation, any solid sheeting on the roof, shingles on the roof, any type of finished flooring, or the size of the flooring or the size of the joists, concrete mix, ventilation, windows, anything like that.

Q. Mr. Norwood, is it true that it is physically impossible to lay a foundation so that it is exactly level?

A. No. We try to get all our foundations

(Testimony of John L. Norwood.)

straight. Foundations should always be laid straight and they normally are.

Q. Now, you examined these Bartholomae improvements upon the Fish Creek Ranch?

A. Yes, I did.

Q. Were they level? A. They were.

Q. When I am talking about "they," I mean the foundations. A. Right. They were.

Q. Now, assuming that I can connect up by Mr. Bartholomae's testimony following yours on rebuttal, that when these buildings were constructed there was power available and power equipment was used, would you state whether or not in using power equipment and cutting 300 or more wall studs, there would be a variation in the length of the studs [363] that were cut?

A. There would be no variation, no, if you cut them with power equipment, provided you tried to be accurate.

Q. Based upon your inspection of this property, in the manner in which it was built, what would be your conclusion with reference to the studs in those buildings?

A. Well, it is quite obvious that everything was straight, the foundation was straight, the eaves were straight on the house. That will show up, the crooked wall quicker than anything when you look at the overhang of the house. If the gutters on the house are up and down and the eaves are up and down, normally it is crooked.

Q. Have you had occasion during the years to

(Testimony of John L. Norwood.)

erect buildings in which the dimensions were irregular instead of everything being square?

A. Oh, yes. In remodeling buildings, we run across buildings that are not square and things aren't cut as accurately as they might be.

Q. Now, does such a factor have anything to do with the tensile strength of the building and the question of whether or not it will settle?

A. Not necessarily. In other words, it is like building a box. A house is basically built something like a box. You could build a box out of square and out of plumb and have it just as strong as a box that was not square. As [364] long as everything fits tight, and it is well nailed, as long as the joints fit and are securely fastened, it will be strong.

Q. I believe you testified on your direct, when you were on the stand before, that with reference to these particular properties, at such points at which there were stresses, it was over-built in the sense that they were stronger than the normal?

A. That is right.

Q. You were present on May 30, 1952, when Mr. Millard was there and Mr. Bartholomae and his attorney, Mr. Mize, and Mr. Bruner who has just testified were there?

A. Yes.

Q. Was there any man there who was from the United States Gypsum Company?

A. No, sir.

Q. Did Mr. Bruner at any time direct your attention, during that day, and while he was there, to what he claimed to be old cracks in the buildings?

A. No.

(Testimony of John L. Norwood.)

Q. Did you hear him request information as to the type of plaster that was being used and that had been used? A. Yes.

Q. Will you state to the court whether or not Mr. Millard answered him? [365]

A. Yes, he did.

Mr. Brett: Just answer that yes or no.

A. Yes, he did.

Q. Will you state what was said, in your presence and in Mr. Bruner's presence, and to Mr. Bruner?

A. Well, Mr. Bruner asked Mr. Millard—

Mr. Weisz: If your Honor please, I will object to the question as irrelevant and immaterial. It was asked of this witness on cross-examination, by Mr. Brett, and I did not feel that I could object to it originally, since he was trying apparently to cross-examine the witness, but we are now going into a very material point. I will object on that ground.

The Court: Overruled.

A. Mr. Bruner asked Mr. Millard what kind of plaster was used on the building, and Mr. Millard told him it was gypsum lath with a hard wall plaster and interior stucco finish.

Q. (By Mr. Brett): Now, during the course of that visit and while Mr. Bruner was present, were you in the building when Mr. Bruner made comment in reference to some cracks in one of the buildings? A. Yes, I was.

Mr. Brett: Just answer yes or no.

A. Yes, I was.

(Testimony of John L. Norwood.)

Q. And who were present at the time? [366]

A. Mr. Millard, Mr. Bruner and I went into the Bartholomae cottage first.

Q. And will you state to the court what was said at that time?

Mr. Weisz: Could I have the reporter read the question?

The Court: Yes.

(Record read by the reporter.)

Mr. Weisz: I will object as no foundation laid, your Honor.

The Court: Overruled.

The Witness: Will I answer the question?

Mr. Brett: Yes.

The Witness: I have answered the question.

Mr. Brett: Have you answered it?

A. Yes. Mr. Millard and Mr. Bruner and I went into the Bartholomae cottage. And you want me to state what——

Q. Yes, I have asked for what was said?

A. We walked in, we entered into the living room. The living room is a rectangular room about 13 by 22, I would say, and there was quite a noticeable crack down the center of the ceiling in the living room. And I asked Mr. Bruner what he thought caused that crack and he said, "It is quite obvious the ceiling joists run that long way of the room and there is a ceiling joist right over that crack, and it is cracked right along the ceiling [367] joist."

(Testimony of John L. Norwood.)

And I said, "Well, no. The ceiling joists run the other way; they run the short way of the room, and if you wish, we can get up and I will show you."

And Mr. Bruner turned around and walked out of the building.

Mr. Brett: That is all with this witness.

Cross-Examination

By Mr. Weisz:

Q. Now, as to this document marked Defendant's Exhibit F, would you read the legend on it, please, Mr. Norwood? Does it have a legend?

A. Yes. It says, "Typical Wall Sections, Frame Construction of the Type Used for Bartholomae Corp. at Fish Creek Ranch, Eureka, Nevada."

Q. Now, Mr. Norwood, would you expect on a print of that type to find the sizes of the joists, the flooring, the subflooring, the rafters, the sheathing, the eaves, et cetera? Is that a building plan, sir?

A. This is meaningless without that, yes.

Q. It is meaningless for what purpose, Mr. Norwood?

A. Well, it doesn't show if the foundation is brick or concrete block, or concrete; it doesn't show how the mud sill was bolted to the foundation, whether it is quarter-inch bolts or inch bolts, how long they are; it doesn't show whether the mud sill is redwood or fir, or it doesn't show [368] if the floor joists are 2 by 4's or 2 by 8's or 2 by 12's; it doesn't show whether the footings are down, set into the ground 6 inches or 3 feet. It doesn't show

(Testimony of John L. Norwood.)

if there are any interior footings under the house bearings. It doesn't show any bracing whatsoever in the house, which is one of the most important features of a building. It doesn't show the size of the ceiling joists. If the ceiling joists were very small, the ceiling would sag and crack in fact. He just says, "Ceiling Joists." He doesn't show the rafters. He doesn't show any roof bracing at all.

In other words, this could be drawn without seeing the building, because every house in the United States is built just this way.

Q. That is right, isn't it, every house in the United States is built this way?

A. That is, the foundation, walls and so forth are put together in this way, but it doesn't say here what size they use; in other words, in some places they use 2 by 4's for joists and in some places they use 2 by 8's; and no building department would accept this for a permit. No carpenter could build a house to this and that specific specification.

Q. Thank you, Mr. Norwood. I think that will be all.

Now, you had occasion to inspect the foundations of these buildings that we are concerned with here, did you not? [369] A. Yes, I did.

Q. And did you check them with a level?

A. No. I checked them by sighting. There is no way of putting a level on them, without removing some of the structure.

Q. In other words, you have to use a mere sighting?

(Testimony of John L. Norwood.)

A. There are two ways of checking. You can sight and also, you have a rim joist on all foundations and if the rim joist fits the mud sill, it is straight, and if it does not fit, it is crooked. In this particular case it was straight.

Q. Now, you stated that where studs are cut with power equipment, depending upon the use of the power equipment, that they could come out equal, is that correct? A. Right.

Q. That would depend upon the power equipment, would it not?

A. I would say it would depend upon the operator of the power equipment more than the power equipment.

Q. Well, would all power equipment do that?

A. You could take the finest piece of power equipment that is made and saw something crooked if you tried to.

Q. No, but if you had an insufficient power saw?

A. No. I think as long as the saw ran, you could saw it straight. [370]

Mr. Weisz: Fine. I have no further questions.

Mr. Brett: That is all. Thank you, Mr. Norwood.

Mr. Bartholomae.

The Court: We will take a five-minute recess.

(Recess.)

The Court: You may proceed.

WILLIAM A. BARTHOLOMAE

recalled as a witness herein on behalf of the plaintiff, having been previously duly sworn, testified further, in rebuttal, as follows:

Direct Examination

By Mr. Brett:

Q. Mr. Bartholomae, you have been sworn before.

Did you have power equipment when the improvements were erected at the Bartholomae Fish Creek Ranch? A. Yes, sir.

Q. And power equipment was used throughout in that work?

A. Yes. It was there until the job was finished.

Q. And it was used for cement mixers, and so forth? A. Yes, sir.

Mr. Brett: That is all.

Cross-Examination

By Mr. Weisz:

Q. Mr. Bartholomae, was all of the wood cutting done [371] by power when these buildings were built? A. Not all of it, no, sir.

Mr. Weisz: No further questions.

Mr. Brett: That is all, Mr. Bartholomae.

That is all of the plaintiff's evidence, if the court please.

Mr. Weisz: Both parties rest, your Honor.

The Court: Sir?

Mr. Brett: The plaintiff rests, yes, sir.

Now, your Honor, I wonder if I might ask a per-

sonal favor? I have been faced with the situation all of this week of an injunction hearing, a very important injunction hearing coming up before Judge Praeger on next Wednesday. It is a labor matter. It involves a voluminous set of documents. Your Honor is familiar with those matters. Now, there are a great many affidavits and matters of that kind. I have been working as best I could at night. I have an associate and he started a paternity suit, something I have never been mixed up in, but apparently it is something he has been on during that entire period before some jury in the State Court. Of course, while I have lived with this case and know about it, I think I could make a better presentation and a more satisfactory one if you would permit me to file a memorandum and allow me approximately 15 days. I could make it shorter and more succinct. I started to dictate one, but I find that [372] after the evidence is in there are certain things I wish to point up with reference to the evidence that has been adduced in these depositions. If your Honor will permit it, that is what I would like to do, because I would like to get back to the office and get to work on the other matter. It is very important. It is going to mean that I am going to have to work nights and Sundays to get ready for it.

The Court: All right. Suppose we make it fifteen, fifteen and five.

Mr. Weisz: Your Honor, then, I take it we will not have any refinement of the issues at all?

The Court: What do you mean by no refinement of the issues? You refine the issues in your memorandum of points and authorities.

Mr. Weisz: Yes, your Honor, and I tried to refine them also on a motion to dismiss, but I did want to be sure that all issues are exact and will be covered then.

The Court: That is right.

Mr. Weisz: Thank you, your Honor.

The Court: That is right. I will take it under submission. Fifteen, fifteen and five.

Mr. Brett: Yes, sir. [373]

Certificate

I hereby certify that I am a duly appointed, qualified and acting official court reporter of the United States District Court for the Southern District of California.

I further certify that the foregoing is a true and correct transcript of the proceedings had in the above-entitled cause on the date or dates specified therein, and that said transcript is a true and correct transcription of my stenographic notes.

Dated at Los Angeles, California, this 4th day of April, 1956.

/s/ THOMAS B. GOODWILL,
Official Reporter.

[Endorsed]: Filed May 11, 1956. [374]

[Title of District Court and Cause.]

CERTIFICATE BY CLERK

I, John A. Childress, Clerk of the United States District Court for the Southern District of California, do hereby certify that the foregoing pages, numbered 1 to 86, inclusive, contain the original:

Complaint;

Answer;

Motion and Notice of Motion for Summary Judgment, Memorandum of Points and Authorities; Proposed Findings of Fact and Conclusions of Law, Proposed Summary Judgment;

Memorandum of Points and Authorities in Opposition to Motion for Summary Judgment with affidavit in support thereof;

Affidavit of Robert W. Millard;

Affidavit of Arthur J. and Chrystal B. Seale;

Order Denying Motion for Summary Judgment;

Plaintiff's Proposed Pre-trial Order;

Amendment to Answer;

Memorandum of Decision;

Findings of Fact and Conclusions of Law; Judgment;

Notice of Appeal;

Designation of Contents of Record on Appeal;

Statement of Points on Appeal;

Ex Parte Order Extending Time for Filing

the Record on Appeal and Docketing the Appeal;

Counter-Designation of Contents of Records on Appeal;

which, together with 3 volumes of reporter's transcript of proceedings; and plaintiff's Exhibits 1, 3 to 31, inclusive; 34 to 37, inclusive, and defendant's Exhibits A to F, inclusive (plaintiff's Exhibit D being attached to plaintiff's Exhibit B); all in the above-entitled cause, constitute the transcript of record on appeal to the United States Court of appeals for the Ninth Circuit, in the above case.

I further certify that my fee for preparing the foregoing record amounts to \$2.00, which sum has been paid by appellant.

Witness my hand and the seal of the said District Court this 10th day of May, 1956.

[Seal] JOHN A. CHILDRESS,
Clerk;

By /s/ CHARLES E. JONES,
Deputy.

[Endorsed]: No. 15141. United States Court of Appeals for the Ninth Circuit. Bartholomae Corporation, Appellant, vs. United States of America, Appellee. Transcript of Record. Appeal from the United States District Court for the Southern District of California, Central Division.

Filed: May 11, 1956.

Docketed: May 29, 1956.

/s/ PAUL P. O'BRIEN,
Clerk of the United States Court of Appeals for the
Ninth Circuit.

In the United States Court of Appeals
for the Ninth Circuit
No. 15141

BARTHOLOMAE CORPORATION, a Corpora-
tion,

Appellant,

vs.

UNITED STATES OF AMERICA,

Appellee.

DESIGNATION OF RECORD FOR PRINTING
AND STATEMENT OF POINTS

Bartholomae Corporation, a corporation, Appel-
lant, designates for printing the portions of the
record, hereafter following, and adopts as its State-
ment of Points the Statement of Points appearing
in the typewritten transcript of the record.

The portions of the record to be printed are
(page references are to certified transcript of rec-
ord):

1. The Complaint (2).
2. The Answer (6).
3. The Amendment to Answer (57).
4. The Pre-trial Order (53).
5. Findings of Fact and Conclusions of Law
(66), also Memo Decision, 11/2/55.
6. The Judgment (73).
7. The Notice of Appeal (74).
8. Designation of Contents of Record on Ap-
peals (as filed in District Court) (76).
9. Counter Designation of Contents of Record
on Appeal (as filed in District Court) (84).

10. Statement of Points on Appeal (as filed in District Court) (79).

11. Ex parte Order (by District Court) extending time for filing Record on Appeal (82).

12. Reporter's typewritten transcript of the proceedings (3 volumes).

13. Reserving the right to obtain an order upon stipulation or motion, after notice, to delete from the printed record the photographs, maps, and governmental publications hereinafter identified with asterisks and descriptions within parentheses, all of the following exhibits:

Plaintiff and Appellant's exhibits:

1. (Map)*, 5, 6 (photo)*, 7 (photo)*, 8 (photo)*, 9 (photo)*, 10 (photo)*, 11 (photo)*, 12 (photo)*, 13 (photo)*, 14 (photo)*, 15 (photo)*, 16, 17 (photo)*, 18 (photo)*, 19 (photo)*, 20 (photo)*, 21 (photo)*, 22 (photo)*, 23 (photo)*, 24 (photo)*, 25 (photo)*, 26 (photo)*, 27 (photo)*, 28 (photo)*, 29 (photo)*, 30 (map)*, 31 (government publication)*, 34 (government publication)* 35, 36, 37.

Defendant and Appellee's exhibits: D and F.

14. This Designation of the Record for Printing and Statement of Points on Appeal.

MIZE, KROESE, LARSH &
MIZE, and

IRL DAVIS BRETT,

By /s/ IRL DAVIS BRETT,

Attorneys for Appellant.

Affidavit of Service by Mail attached.

[Endorsed]: Filed June 8, 1956.